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# DEVELOPMENT AND IMPROVEMENT OF PORTS

## The principles of modern port management and organization

Report by the UNCTAD secretariat

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CONTENTS

| | | Paragraphs |
|---|---|---|
| Introduction | | 1 - 19 |
| A. | Foreword and mandate for the study | 1 - 7 |
| B. | Recent trends in the field of ports and their environment | 8 - 19 |
| 1. | Economic aspects | 8 - 13 |
| 2. | Technological aspects | 14 - 15 |
| 3. | Social and environmental aspects | 16 - 18 |
| 4. | Consequences for port organization and management | 19 |
| Chapter | | |
| I. | Organization of a national port system | 20 - 146 |
| A. | What ports are for | 21 - 60 |
| 1. | For port "owners" | 24 - 36 |
| 2. | For port operators | 37 - 40 |
| 3. | For port users | 41 - 43 |
| 4. | Social purposes of ports: the standpoint of the personnel of port enterprises | 44 - 50 |
| 5. | The port area and the port community | 51 - 54 |
| 6. | Priorities | 55 - 60 |
| B. | The tasks and functions of a port system | 61 - 76 |
| 1. | External functions | 64 - 66 |
| 2. | Internal functions | 67 - 76 |

CONTENTS (continued)


| Chapter | | | Paragraphs |
|---|---|---|---|
| I. (cont'd.) | C. | Port organization structures ..... | 77 - 146 |
| | | 1. Some general principles of port organization ..... | 79 - 85 |
| | | 2. Port system structures at the national level ..... | 86 - 96 |
| | | 3. Structures of a port area : Adoption of a functional structure ..... | 97 - 100 |
| | | 4. The need for a port authority ..... | 101 - 105 |
| | | 5. The various forms of port authority .... | 106 - 124 |
| | | 6. The public sector and the private sector: privatization ..... | 125 - 141 |
| | | 7. Port community structures ..... | 142 - 146 |
| II. | Port management ..... | | 147 - 182 |
| | A. | Some general principles of management: The theory of total quality-control management ..... | 148 - 154 |
| | B. | Special features of port management ..... | 155 - 158 |
| | C. | The objectives of port management ..... | 159 - 168 |
| | | 1. The overall objectives ..... | 161 - 164 |
| | | 2. The sub-objectives ..... | 165 - 168 |
| | D. | Decision-making in port management ..... | 169 - 182 |
| | | 1. The three categories of decisions ..... | 170 - 173 |
| | | 2. The levels of decision-making ..... | 174 - 177 |
| | | 3. Constraints on decision-making ..... | 178 - 179 |
| | | 4. The selection of port decision makers . | 180 - 182 |

CONTENTS (continued)


| Chapter | | Paragraphs |
|---|---|---|
| III. | The tools of port management ..... | 183 - 223 |
| | A. Administrative tools ..... | 185 - 189 |
| | B. Economic tools ..... | 190 - 207 |
| | C. Financial tools ..... | 208 - 210 |
| | D. Commercial tools ..... | 211 - 213 |
| | E. Technological and operational tools ..... | 214 - 219 |
| | F. Development of human resources ..... | 220 - 223 |
| IV. | Examination and diagnosis of port organization and management ..... | 224 - 239 |
| | A. Examination ..... | 226 - 234 |
| | 1. Examination of external functions (operational and administrative) ..... | 227 |
| | 2. Examination of economic, financial and social functions ..... | 228 - 229 |
| | 3. Examination of development functions .. | 230 - 234 |
| | B. Diagnosis ..... | 235 - 239 |
| V. | Conclusion ..... | 240 - 243 |

Annexes

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# INTRODUCTION

## A. Foreword and mandate for the study

1. The Ad hoc Intergovernmental Group of Port Experts, which met at Geneva from 24 to 28 September 1990 pursuant to resolution 61 (XIII) of the Committee on Shipping, adopted a number of recommendations one of which dealt with the future programme of studies by the UNCTAD secretariat in the field of ports. It recommended that priority should be given to five studies, including one on "The principles of modern port management and organization". As the Committee on Shipping, in its resolution 65 (XIV), requested the secretariat to continue implementing its mandates, taking into account the recommendations of the Ad hoc Intergovernmental Group of Port Experts, the present study was initiated early in 1991.

2. It would seem useful at this point to make some preliminary observations. In the title of the study, the adjective "modern" was used by the members of the Intergovernmental Group to emphasize that the new commercial role which many ports were called upon to play did not need to be overly administrative and bureaucratic. Furthermore, account had to be taken of the fact that there already existed many studies of port organization and management. A list of these will be found in annex I. The two subjects have therefore been examined from a new angle, in the light of present day requirements and taking account - as do all the studies - of the specific problems of ports in developing countries. However, the special character of those countries should not, in most cases, prevent them from applying the same principles of port organization and management as are recommended in developed countries.

3. It is also necessary to point out that port organization and port management are not readily separable. As will be seen later, organization is one of the tools available to the port manager for the achievement of his organizational objectives. It is only in order to facilitate analysis and presentation that the two questions have been dealt with separately here.

4. The study is addressed mainly to decision makers in ports and in the government departments concerned, for it is they who, in each country, have to deal with the questions of port organization and management. Recent observations have shown that, as a rule, these senior officials and authorities are now highly competent, spectacular progress having been achieved in this field in the last decade. The study has been prepared accordingly, as it may be assumed that these authorities will know how to adapt the general principles put forward to local circumstances.

5. The study forms part of an overall UNCTAD programme of port studies which comprise many publications on the subject of ports. Four other studies requested by the Intergovernmental Group are also being prepared. Frequent reference will be made to these other studies in order to avoid multiple examination of the same subject. A table shows how the various UNCTAD port studies are related to and supplement one another.

6. The main part of the present study is composed of four chapters. Chapter I examines questions of port organization both at the national level and at the level of the port area. The purposes, functions and structure of a port system are successively investigated. It was considered, possibly somewhat arbitrarily, that the internal organization of port enterprises pertained more to the question of management, which is dealt with in the next two chapters. Chapter II deals with objectives and decision-making within the port enterprise or authority, while chapter III describes what may be called "the tools of port management", which are simply the methods and other resources available to port managers for the management of their enterprise. Finally, chapter IV presents an outline proposal for helping port managers to evaluate the quality of the management of their enterprise.

7. It will have been noted that the expression "port enterprise or authority" has frequently been used. The present study has been prepared for countries which have adopted forms of port organizations and operation which differ considerably, as will be seen later. Those in ports who are the decision makers and exercise authority are no longer only the "port managers". More and more frequently, there are, in addition to the port authority officials, "operators" who are organizing and developing, becoming increasingly powerful and independent and are playing a key role in the life of the port. The present study is also addressed to these operators, who may be either in the private or in the public sector. This approach means that the reader of the study must make the necessary adjustments.

## B. Recent trends in the field of ports and their environment

### (1) Economic aspects

8. The need to develop foreign trade and contribute to national economic growth places a heavy burden of responsibility on the ports of all countries and especially the ports of many developing countries. It is essential that ports function efficiently. An examination of the latest classification of world ports by tonnage of goods handled or number of containers received, shows that, more and more frequently, certain ports of developing countries and regions appear in the top rank. It will also be found that the ports recording the most spectacular progress in recent years are generally those of developing countries and regions, particularly in Asia. These same countries have also recorded high rates of economic growth. Conversely, there is no known developing country that has recorded substantial economic growth without a sustained increase in its foreign trade, based on efficient ports. Ports play a special role in the development of foreign trade.

9. In many countries foreign trade shows a rate of growth exceeding that of the industrial gross national product. This has been evident for more than 40 years in both industrialized and developing countries. This trend has been accompanied by a change in the role of the trading port, which, within a few decades, has become less a compulsory point of changeover from maritime transport to some other mode of transport (land, air or inland waterway) and a strategic point in the organization of foreign trade, a principal link in the integrated transport chain and the economic, and often industrial development, pole for the region concerned.

10. Several major trends in the economic development of port environments should be mentioned. These are: the general trend towards liberalization, or "deregulation", of transport services; the growth of multimodal transport; the reorganization of shipping fleets; the specialization and the increasing size of vessels and the new requirements of shippers.

11. In certain regions, such as North America, "deregulation" of transport policy has been an important factor for change and restructuring, which has affected ports as well. The "liberalization" of shipping which can be seen, for example, in South America (abandonment of the cargo reservation system), is profoundly altering the bases of maritime policies and has a direct impact on ports. An increasing number of ports, including those in developing countries, are being affected by the introduction of multimodal transport, which is leading to accelerated containerization of the transport of their general cargo and is accompanied by modification of port procedures and methods, with changes at both the legal and administrative levels. The shipowners concerned have used the flexibility and the modularization made possible by the introduction of containers to reorganize their shipping services by replacing direct lines from port to port by networks of services organized around transshipment ports. By grouping cargo traffic, they have been able to increase the size of vessels and to make full use of their capacity and also to reduce unit costs and shipping times. The tendency to use specialized vessels is observed in almost all bulk traffic (oil tankers, liquid gas carriers, etc.), the neo-bulk traffic (sawnwood, etc.) and special traffic (e.g., integral cellular container carriers, motor vehicle carriers). These vessels ensure a high level of performance for specific types of traffic or packaging. There is also increased use of multi-purpose and roll-on/roll-off vessels, which have a lower performance level but carry a greater variety of goods packed in different ways. With the reorganization of various traffic, the most efficient vessels are assigned to the high-density sea routes and the smaller or multi-purpose vessels devoted to feeder activities or to routes with less traffic. The internationalization of markets and the increase in competition have led shippers to make greater demands on international transport and to require better port services. In addition to a demand for the lowest possible port costs, they are also concerned about other matters: lower total port costs (including ship and cargo transit time), a steady flow of goods (no requirement to hold stocks), delivery of goods in sound condition, and extension of the range of services offered, such as distribution or assembly activities or processing of raw materials.

12. There has thus been a change in the role of ports. Port activity is no longer confined to the harbour proper and the area of land around it. Onshore, it now takes place all around the starting point of the transport chain. In the case of some ports these new activities generate more than a third of the port income.

13. Progressively, during the 1950s and 1960s, some traditional ports (which had previously been mere transport centres) have developed into commercial and industrial service centres which in some cases add considerable value to the goods they handle. During the last 10 years this process has accelerated in some very busy ports. There has been a diversification of port services,

which now extend beyond the conventional port boundaries. Distribution activities constitute one example. Superimposed on the physical infrastructure of ports there is now also a veritable information infrastructure (to which some have given the name "infostructure". Ports which have moved in this direction are thus becoming veritable logistic platforms for international trade. These three types of port may be viewed as ports of the first, second and third generation (see table 1). These concepts will be described in greater detail in the UNCTAD study "Port marketing and the challenge of the third generation port" (TD/B/C.4/AC.10/5).

Table 1

| THREE GENERATIONS OF PORTS | | |
|---|---|---|
| A. | First generation (prior to 1950) | Sea approach, transfer of goods, temporary storage, delivery. |
| B. | Second generation | Includes A plus industrial and commercial activities which give added value to the goods. The port is a handling and services centre. |
| C. | Third generation (since 1980) | Includes A plus B plus structuring of the port community, plus strengthening links between town and port and between port-users, plus extension of the range of services offered (e.g. distribution) beyond the port boundary, plus an integrated system of data collection and processing ("infostructure"). The port has become a logistics platform for trade. |

(2) Technological aspects

14. Port organization and management cannot be discussed without considering the "policy" of the service-providers, whose activities are vital to the port's existence. Among the most important of these are the shipowners. The latter's activity is largely determined by the possibilities offered by shipbuilding technology. Although there are still today, on the lines serving developing countries in particular, many conventional general cargo vessels, it is likely that in the future there will be only three major categories of cargo ships: bulk carriers (for dry or liquid cargoes), container ships and conventional specialized ships or roll-on/roll-off vessels (which carry heavy or bulky consignments, specific products, motor-vehicles, neo-bulk consignments - in other words goods which cannot be containerized). What will be the size of these ships? This question is a key parameter for port development. It is not expected that there will be a race to build ships of ever greater size, as much for technological and economic reasons as for reasons of safety and protection of the environment. As far as liquid bulk cargoes are concerned, oil tankers now range in size from 20,000 to 85,000 tons deadweight for refined petroleum and from 100,000 to more than 300,000 tons deadweight for crude petroleum, while liquefied petroleum gas carriers can be of up to 80,000 cubic metres. As for dry bulk cargoes, vessels

of 200,000 to 250,000 tons deadweight are useful for carrying coal, slightly larger ones (250,000 to 325,000 tons deadweight) for iron ore, and smaller units (less than 50,000 tons deadweight) for phosphate and agro-food products. For containerized transport, fourth generation container ships of 4,400 tons equivalent units (TEU) have been introduced and feeder line ships have been of 1,000 to 1,200 TEU, or even 2,000 TEU on routes linking major shipping lines (further details of the current composition of shipping fleets will be found in annex II).

15. These technological developments make it necessary for ports to follow this trend and equip themselves accordingly, particularly as regards infrastructure and port equipment, but also in the area of other support or associated services. Thus large bulk carriers proceed to berths where the equipment permits their unloading in only a few hours (the 24-hour rule), but it is often necessary to provide large storage facilities for goods awaiting reshipment. The reduction in the size of crews has led to an increase in certain maintenance activities carried out in the port. The growth of the use of containers makes it necessary to provide not only for their handling but also for their repair. The requirement for collection, processing and circulation of data is steadily increasing.

(3) Social and environmental aspects

16. No port policy can ignore the sociological phenomena characteristic of the present period. Even with rising living standards, the need to ensure the safety of persons and of goods is increasing. This is true in regard to both workplaces and the human elements of all port activities. It affects port approach operations, transshipment and storage of goods, embarcation of passengers and the movement of equipment and vehicles within ports.

17. Another concern is respect for the environment: environmental harm or damage is less and less tolerated and there is widespread increasing recognition that degradation of the natural heritage is placing the survival of humanity at risk. The environment may be threatened by harm caused in port areas: pollution of the sea, of water or of land areas, air pollution and noise and vibration caused by equipment and vehicles or by port construction work.

18. More generally, there is a three-fold requirement reflecting respect for the human person: the need for personal freedom, the need for physical and mental security and the need to understand. This applies in relations between employers and employees, in commercial relations and, more broadly, in all the activities of everyday life, where any form of domination is less and less tolerated.

(4) Consequences for port organization and management

19. These new economic, technological and social developments represent a challenge for ports, not only as regards their infrastructure and equipment, but also in the areas of organization and management. In the field of shipping there has already been an improvement in organization and management methods so as better to meet the requirements of the market. Emphasis is

placed on efficiency, i.e. on speed of decision-making, speed of adaptation to change, the elimination of the slightest deficiencies in operation, and therefore on cost reduction. Ports cannot ignore these changes or the requirements of their partners in the transport chain and they therefore need to modernize their organization and management. A good example of this will be seen in an examination of the operation of the "just-in-time" delivery system. This system, which has been applied in industry, is based on a very high degree of punctuality in deliveries, making it possible to reduce or even eliminate the holding of stocks. Hence the slightest delay in the transport chain can involve serious consequences. Sea carriers have taken measures of adaptation, modifying their organization and management so as to offer multimodal transport and thus guarantee close control of operations from starting point to destination. Ports are an essential link in this system and their organization and management must be commensurate with that of the other parties involved in transport operations if they are not to lose traffic through lack of competitivity.

## Chapter I

## ORGANIZATION OF A NATIONAL PORT SYSTEM

20. Almost every country with a sea coastline has what may be called a "port system", generally composed of one or more trading ports of different sizes. The organization of such a system requires, first of all, a knowledge of the purposes which the ports are intended to serve and the functions they must perform in order to achieve those purposes. Questions will be therefore taken up in the order mentioned. To refer to the ultimate raison d'être of a port system or of a port, the term "purpose" will be used because it is broader in meaning than the term "objective". However, in dealing with the question of the management of a port enterprise, the term "management objective" will be used to designate the specific and quantifiable aim of an enterprise.

### A. What ports are for

21. A seaport is normally established on a country's coastline, which constitutes a political frontier. Ships generally enter the port from the high seas, an area that is essentially international.

22. Ports are today the strong points of the economy of countries possessing a coastline and they constitute the "lungs", as it were, for their foreign trade. They are the compulsory transit point for the bulk of this trade, permitting the import of goods which the country does not itself produce in sufficient quantity and the export of items contributing to the development of its economy. Ports are also a good place for the provision of further services which add value to the products transported and thus help better to meet the increasing demands of trade.

23. Port activities, therefore, contribute to the economic independence of nations, which is vital to their political independence, and they perform a strategic role in their trade. What are the purposes of ports? In order to answer this question it is first necessary to identify the organizations or persons concerned. A distinction must be made between several groups of persons: the "owners" of the port, the operators, the users, the port workers and the port area or port community. The possible "purposes" often differ and sometimes conflict; nevertheless, there is convergence on essential points.

#### (1) For port "owners"

24. Although there is currently a tendency towards "privatization" of entire ports or parts of ports, in most countries the port "owner" is still the governmental authority, whether national (the State) or regional or local. Its representative is the port authority or administration.

25. What are the purposes which these public entities wish the port to serve? Two conceptions prevail, one will be called the microeconomic approach and the other the macroeconomic approach.

26. In the macroeconomic approach, which may also be called the "global" or "national" approach, the governmental authority considers that the purpose or aims of the country's port system must take precedence over the individual purposes of each port and, a fortiori, of each operator. The national port system must make the greatest possible contribution to the country's development. This is a voluntarist type of policy that views port questions from a global standpoint. In economic terms, the purpose is reflected in an effort to find the lowest possible overall cost for the transiting of goods through the ports of the national port system. The cost of transit through ports is an important element of the overall cost of sea transport and, ultimately of the cost of imported and exported goods.

27. This cost burden determines the price that will be paid by nationals of the State in which the port is situated for goods imported for direct consumption and for the raw materials needed for the production of goods for domestic consumption. It is also a factor in the sale price adopted by the exporting activities based on goods produced from national resources, and is an even more important factor in the case of export goods obtained by the processing of products imported by sea. The level of this cost is often a determinant in the choice of ports of call made by shipowners, which may either serve a port directly or indirectly, from another port offering more attractive transit costs.

28. Ports thus play an essential role, not only for a country's foreign trade, but for its entire economy and for the standard of living of its inhabitants. Ensuring the lowest possible port transit cost is therefore a means of reducing the prices paid by the country's consumers, but it is also the way to help ensure that the country's natural or industrial products will be competitive with those of other countries. Today, no economy has a captive market; in order to sell its products, it must offer its potential customers a combination of quality and price that is at least as attractive as that offered by its competitors.

29. In addition to this basic purpose of ports, there are other complementary purposes: contributing to better land use, promoting the development of particular areas or of certain goods traffic, creating employment and earning foreign exchange. A macroeconomic approach naturally leads the public authorities to intervene in decisions concerning the establishment, development and operation of ports and, in particular, induces them to be the initiator of decisions regarding the siting and design of the structural works which determine the vocation of ports.

30. Such intervention by the public authorities varies considerably from country to country, both in its nature and its level, ranging from total control of the port system by the administrative services of the State, or of some other national public authority, to the mere ordering of measures setting the framework for the establishment and operation of ports that are managed by a local public authority or are entirely or partly let out to private operators. It is worth noting that in medium-sized and small countries (those which generally have one or only a few ports) the port plays a vital role and

is one of the major elements of the national system of production. Efficient functioning of the port is one of the major concerns of the public authority. It is this type of country that has provided examples of port efficiency, dynamism and innovation (Singapore, Hong Kong, Netherlands, Belgium, etc.). In the case of larger countries, the role of ports in the national economy may not be as great; this will be reflected in the attitude of the governmental authority towards the country's ports. In such cases, a port is often merely one tool among others for ensuring a steady flow of the goods needed for the country's trade and industry. In many developing countries the situation is comparable to the first of the two categories referred to above: the purpose of the port should be to play a key role in national development.

31. Although the macroeconomic approach does not necessarily mean bearing all or part of the capital or operating cost of ports, the public authority frequently does not require that the port system - and a fortiori its constituent ports - be financially self-sufficient. Direct or indirect transfers are made from other sectors of the economy to the ports' sector in order to finance wholly or in part heavy investment in major works (as in the case of the creation or major extension of ports) since port infrastructure is often indivisible and cannot be below a certain minimum threshold, whatever the amount of traffic. Some items of infrastructure (including channels, breakwaters and access works) have an economic life that is considerably longer than the repayment period of the loans that must be taken out for their complete financing. Finally, in some countries the trade handled by the ports is not always sufficient to make heavy capital investment economically worthwhile. This is sometimes the case in island countries, where ports must also play a social role by ensuring communication that will prevent isolation.

32. When the governmental authority has to play a part in the financing of port works, it generally imposes on the establishments of its port system, along with the purposes and objectives described above, certain directives and constraints (for example, a say in all development projects and in certain other matters such as budgets, pricing and employment). However, in some cases, and in developing countries in particular, the Government has sometimes imposed further port "purposes" of such a binding nature that they run counter to the basic purpose, which is to secure the lowest possible port transit cost. Two examples of such constraints may be mentioned:

(a) requiring the port to contribute directly to the financing of the State budget;

(b) imposing on the port a policy of over-recruitment of personnel.

Such practices lead to a distortion of the basic objective of the port and they give rise to disillusionment among the senior port personnel, who lose their motivation to be efficient. In the long term such policies are prejudicial to the country's economy.

33. In the case of the microeconomic or "local" approach, the governmental authority adopts a radically different position. While it considers that the basic purpose of ports is to achieve the lowest possible goods transit cost,

it also considers that the best way of achieving this is not to interfere in the life of ports, whether by subsidies, directives or controls. In this case, the Government takes no initiatives regarding the establishment, development and operation of ports. On the contrary, it allows complete freedom of initiative to the public or private operators. The government role is confined to checking that any action the port takes is compatible with general policy in various fields such as the use of the coastline area, and protection of the environment and of port users, etc. The last-mentioned aspect - protection of port users - may lead to ensuring that no monopoly situations develop, or understandings or other practices which would distort the market. The Government considers that the free play of market forces will ensure the best investment choices and the most efficient operation of the facilities provided. Each port thus functions autonomously and can therefore freely set its own economic objectives and its objectives as regards employment, return on investment, pricing, etc.

34. Both approaches may be found throughout the world. Annex III contains some examples of their application. Which is then the better of these two approaches, for the developing countries in particular?

35. Some decades ago, the tendency in many countries was towards the macroeconomic approach. However, there were so many excesses, particularly as regards interference and "constraints" imposed by Governments, that the tendency shifted in favour of the microeconomic approach and its frequent corollary: privatization. This is not the place to express a preference for either of these schools of thought, as each one has its own special features and account must be taken of the economic, political and social context. The present trend of political and economic systems, the increasing specialization and integration of transport and the ever-increasing outlay involved mean that many countries will probably be led to adopt a mixed system, incorporating the two approaches in proportions which may vary considerably from country to country and from one period to another.

36. In the case of developing countries, where resources are limited and the private sector has not reached maturity, it seems unlikely that the State can rely solely on market forces to guide the development of its ports; it also seems unlikely, where there is a centralized and sometimes "interventionist" approach, that the port operators will be granted the management freedom and freedom of investment that is essential if the required efficiency of port operations is to be achieved.

(2) For port operators

37. In many ports, the operators (cargo handling and stevedoring firms, etc.) are not the owners of the port installations. There is an increasing number of such enterprises. They are often private firms, but are sometimes wholly or partly publicly owned. For all these operators, the main "purpose" is generally that of covering their costs and making a profit. The fundamental difference between the microeconomic approach and the macroeconomic approach is that in the former case the operator is never subsidized, and must finance its own investments with considerable freedom of action regarding

the tariffs it applies, as well as for all other decisions (recruitment of personnel, etc.). In the case of the macroeconomic approach, some and sometimes all the major works (e.g. breakwaters, locks, and even quay walls) used by the operator are often partly or entirely financed by the public authorities, which place them at the operator's disposal, charging for their use, or which lets them on a long-time basis (from 1 to 25 years or more) for a flat payment. In some cases, the authority exercises some supervision of the operator's activities, particularly regarding the use of the works and/or the operator's tariffs.

38. Frequently, however, in certain industrialized countries (e.g. France, Belgium, Netherlands) and more generally in the developing countries, a mixed system is adopted whereby a port authority representing the Government - with its macroeconomic objectives - cohabits with port operators, often private enterprises, which function in a free enterprise context and are subject to the laws of the market. There may be a situation of lasting equilibrium if the State and/or the port authority use their methods of supervision and control judiciously and establish regulations designed to avoid the creation of monopolies or institute price supervision so as to ensure that the macroeconomic purpose is achieved, while leaving the operator sufficient freedom of action. Broadly, the Government requires the port authority to manage the port as a private enterprise, developing and operating it in such a way that, in addition to any subsidies it receives, it will derive from the port's operation the necessary revenue to balance its own budget or make a profit. In the same way, the operators seek to make a reasonable profit that is justified by the improved services they offer to the traffic, by attractive pricing, by increasing their production through more active promotion and offering a better quality/price ratio or by reducing their operating costs by such measures as improving their organization, management and productivity, by personnel training, by wise investment, by using efficient methods and by introducing new technologies.

39. One of the best methods of price supervision available to the State is the encouragement of free competition. It has been seen that in some ports where there was no competition there were very serious failings on the part of the operators, and particularly on the part of the cargo handlers, whose role is vital to efficient port operation. The reason was usually overstaffing, low efficiency and considerable disorganization causing losses, delays and much damage. This situation has been found in the case of public-sector cargo handlers. Where private sector operators were in comparable monopoly situations, this was a result of a desire to maximize profit in the short term, without any reinvestment or personnel training. Where there is competition between existing operators, this leads them to act in a manner which, while beneficial to them, also serves the general interest by achieving the optimum cost for transit of goods through the port, as the competition naturally encourages the operators to increase their productivity through greater output or lower costs, and to adjust their tariffs in order to attract traffic or avoid losing it.

40. Consequently, there is not necessarily incompatability between the macroeconomc and the microeconomic objectives. All the industrial and commercial activities necessary for or induced by the transiting of traffic

through a port are linked by a de facto solidarity which may be attributed to the fact that the behaviour of each of the parties involved influences the port's competitivity. The same situation applies as regards the role of the public services concerned.

(3) For port users

41. Who are the users of ports? The logical answer would seem to be the shipowners and the shippers. This answer is not complete. There are direct and indirect users of ports; intermediate users and final users. Shipowners are direct users of ports but they are not the final users. The final users are those who really pay for the port services. The totality of the port charges borne by the shipowners are passed on, through the importers and exporters, to the producers of the goods exported from a country and to the consumers of the goods imported into a country. The same applies to the other intermediaries, namely the forwarding agents, who pass on their port costs to the producers or consumers whom they represent. While there may be cases where an increase in port charges does not immediately result in higher sea freight, in the long term the shipowner will not absorb this increase and will pass it on to the consignor of the cargo.

42. The country's producers and consumers are therefore the final users of ports. What they seek from ports is service of the best possible quality at the lowest possible cost. It is necessary to point out that the costs charged to the users when a ship and its cargo call at a port (e.g. pilotage, towing, port dues, agency fees, etc.) are only one element of the total cost of the ship's call at the port, which also includes the cost of the vessel's inactivity (waiting time and cargo handling), the temporary storage of cargo and any loss or damage. The port that is expensive for the users is not necessarily the port with the highest tariffs; it is rather always the port where the services are poor because of delays, inefficiency and damage. Securing the lowest possible overall port transit cost for these final users is the aim generally expressed by shipowners and forwarding agents when they use a port. In other words, the shipowners' objectives are the same as those of the final port users: the country's producers and the consumers of the goods carried. It is in this sense that provision of good service to domestic or foreign shipowners is in most cases a service rendered to the country's producers and consumers, provided there is some competition between shipowners, so that they pass on to the final users the gains in productivity realized because of the port's better service.

43. This is why, in the macroeconomic approach, the Government considers that provision of the best possible service to users at the lowest possible port transit cost must be the primary aim or purpose of ports.

(4) Social purposes of ports: the standpoint of the personnel of port enterprises 1/

44. The fact must be recognized that, compared with other enterprises, ports are economic spaces whose size, special character and workplace organization are such that they must be examined with particular attention. The activities connected with the transit of traffic through a port obviously create

considerable employment requiring personnel with different kinds of training and skills. The passage of traffic through the port directly entails the performance of many kinds of activities within the port site itself:

- Construction and maintenance of the port infrastructure and equipment provide work for enterprises in the civil engineering, mechanical engineering, electrical and electronics fields;

- Reception of ships requires sea and inshore pilotage and towing firms;

- Transshipment of goods and their inward and outward forwarding provide work for cargo handling and transport enterprises;

- Transit operations necessitate the intervention of specialized enterprises;

- Supplying, fuelling and repair of ships provide work for local enterprises;

- Administrative work involves not only the personnel of the entity managing the port, but also that of all the various administrations concerned with foreign trade;

- In addition to these traditional activities, the most efficient ports also have such operations as warehousing, packaging, bulk breaking and distribution, as well as repackaging and even processing of products, which adds considerably to product value.

45. The economic fallout from port activities extends well beyond the occupations and offices which help to move traffic through the port: all industry, commerce and administrative services in the area are involved in the port's activities. Thus, a passenger port provides business for the hotel and tourism industries; the need of other industries to site plants close to the docks leads to the creation of industrial zones, warehousing and other storage facilities within or close to the port area. These port-related activities give rise in turn to industrial or service activities necessitating the provision and management of community services, housing, shops, etc., which contribute to the development of the local economy. They too are subject to the general rules affecting all industrial, commercial and administrative activities, of which the principal one is the need to adapt to the economic circumstances.

46. Advances in technology have resulted in the mechanization of what formerly required manual labour and in the application of computers to management activities. This had led everywhere to a lower manpower requirement for a given output, but it has also resulted in a need for personnel with a higher level of skills.

47. Training is therefore a prerequisite for the timely adjustment that must take place if a port is to play its proper role in the economy. Training must be provided in all types of work, because efficiency must be improved at all levels in every activity.

48. The tendency towards a lower manpower requirement for the performance of a given function has been accompanied by the institution in certain countries of a system of social protection of workers affected by redundancy. Apart from the provision of material assistance enabling those made redundant to have a minimum amount for their subsistence, training constitutes one of the best means of facilitating readjustment to other types of work and the possibility of finding new employment.

49. Special reference must be made, in this connection, to port cargo-handling activities, which are very irregular owing to the irregularity of arrivals of vessels and goods. The need to have sufficient manpower in order to avert costly traffic delays (having regard to the increasingly high cost of immobilized ships and idle port equipment) means that the cargo-handling enterprises must retain more personnel than can be fully employed on a continuous basis and there is thus some periodic under-employment of the workers concerned. Whatever the type of traffic handled, for a port to function efficiently, a solution must be found to this problem. While cargo-handling accounts for a very large part of the cost of transit through a port (nearly 50 per cent for general cargo with conventional packing), interruption of this operation paralyses the port and compromises the reliability of its operations.

50. The social purposes of ports also necessitate taking into account such factors as industrial safety and general safety in the port area, as well as protection of the environment. Dealing with these social questions is a very delicate task. In the present context, it calls for courage and vision. Some countries, including even some of the most highly developed ones, are reluctant to adopt social objectives adapted to the requirements of traffic and competition and they simply follow the practices of the past. In the end, however, they lose market share owing to the reactions to such policies that sooner or later develop.

(5) <u>The port area and the port community</u>

51. The "port area" concept has gradually been adopted because, with the development of international trade and the modernization of trading methods and transport, the port's role has in many cases progressed from that of being a mere physical point of transit at the sea/land interface, to being a more or less highly developed logistics centre for trade. It should be noted that this trend started in ports in the smaller countries and has spread, because their port history and culture has been a particularly fertile terrain.

52. To the traditional zones of quay activities (cargo transfer operations) and transit sheds, there has now been added a third zone extending over the entire port area, where operations are carried out that give substantial added value to goods moving through the port (storage, repacking, assembly, distribution, etc.).

53. The principal purpose or aim of these port areas and of the local communities is promotion of the port itself, securing goods traffic and providing new services. Translating this into economic terms, it may be said that the port community sets as its aim, not only to ensure that goods move through the port at the lowest possible cost, but to give the goods the greatest possible added value while they are in the port area (Table 2).

Table 2

DISTRIBUTION

An example of new port activities giving high added value

As Europe's ports are competing to serve the future expanded European market, some port authorities have set up, not too far from their port, "distribution centres" that are linked with rail and motorway networks. Firms which have set up business in these centres offer their customers a range of integrated, logistical and distribution services ranging from storage of goods to their preparation for sale, including inspection, packaging and delivery. Some major importers of manufactures have thus been able to dispense with the storage and distribution centres they formerly had in each European country and have organized their entire distribution network from a single port where they have set up operations and are linked with their customers by real-time computerized systems. They are thus able to achieve better control of their goods, greater flexibility and an appreciable reduction of costs.

54. This purpose imposes certain requirements:

- The community must be united, it must be motivated and it must be guided.

- The interests of the port area must take precedence over the interests (and objectives) of the members of the port community. In other words, the first task is to gain market share and only then can there be competition in order to divide the benefits of expansion.

- Administrative services, including Customs and the port authority, must facilitate, prepare and encourage these changes, without yielding to the temptation to interfere in commercial operations.

These questions are dealt with more fully in the UNCTAD study "Port marketing and the challenge of the third generation port" (TD/B/C.1/AC.10/4).

(6) Priorities

55. Over the long term (and even the medium term), irrespective of the systems adopted, there may be a convergence of the various purposes and aims if, underlying them, there is a desire to further the general national interest of the country in which the port is situated. This is not incompatible with developing and motivating the country's economic agents.

56. It is in the general interest if the port offers traffic the best possible quality-of-service/transit-cost ratio. However, qualitative factors do not lend themselves to evaluation. They must, as far as possible, be quantified (thus, if the cargo-handling equipment is not reliable, the port must have an excess stock of equipment so as to avoid any interruption of port operations. The cost of such surplus equipment can be determined with accuracy).

57. The prices charged by the port enterprises should contribute to this end, while allowing margins that will give the enterprises a reasonable profit, if care is taken to avoid situations of monopoly, since the interests of the enterprises and of the country converge in both the medium and long term. If the transit-cost objective is too stringent, the pressure on the providers of port services to cut costs will jeopardize their proper functioning, including their investment capability and the quality of the service rendered to the port's traffic. Services provided for foreign trade will decline, a development not in the general interest. If, on the other hand, monopolies are allowed to develop, with the resultant higher charges for the services of port enterprises, the overall port transit costs will be higher, traffic will abandon the port, to the benefit of a competitor, and the entire port area will suffer as a consequence. Or, if the traffic is obliged to use the port, the entire economy will suffer, with a resultant decline in trade which will be prejudicial to the interests of the port area enterprises. The health of the overall economy and that of the port area enterprises is interdependent and a factor in the social role that ports may play.

58. In the matter of employment, pay and social protection of wage-earners, the enterprises can give only what they are able to earn. If providing employment takes precedence over economic factors, port transit charges will rise and the port will lose business. Unfavourable social consequences will inevitably and rapidly result from such a policy.

59. It is precisely because the port's welfare is dependent on development of the port area enterprises, and because the latter will be efficient only if they have competent and motivated personnel, that maintenance of living standards in the port and its vicinity is a determining factor in the port's prosperity. Any advantage to be derived from execution of projects that are prejudicial to the environment or the profit to be gained by saving on industrial hygiene and workplace safety would be rapidly nullified by the diversion of skilled and efficient manpower to other sites or other activities, not to mention the always very high cost of stoppages and conflicts that result when there is a failure to take account of the interests of social partners or third parties. The principle that quality of life has its cost must be accepted and the cost must be set at a level such that it contributes to achievement of the country's overall economic objective.

60. Despite the existence of short-term differences of aim between the State, the port authority, the operators, the port employees, the port community and the users, there is nevertheless, in the medium and in the long term, some convergence and a common aim emerges, namely achievement of the lowest possible overall transit cost and the highest possible added value. The economic and social progress of the port and of its region is dependent on achievement of this aim. Whatever the approach adopted (microeconomic or macroeconomic), this aim should determine a country's port policy and should therefore determine the organization and management of the country's port system, both at the national level and at the level of the individual port areas. This policy and the measures taken to implement it cannot, however, be confined to this economic aspect alone. To various degrees and according to the choices made, they must also contribute to the achievement of the entire spectrum of aims - the port's role in land-use planning, the achievement of social equilibrium, not to mention such other concerns as industrial hygiene, safety, and preservation of the environment.

## B. The tasks and functions of a port system

61. A function is a set of organized, structured and complementary tasks which are carried out by persons or groups and contribute to achievement of the objectives of the organization in which they work. Thus, in a port, the "storage" function is composed of tasks carried out by checkers, classifiers, warehouse workers, security guards, etc., assigned to a particular warehouse.

62. The form of organization of a port system must be developed with the aim of fulfilling these purposes, including the priority objectives. However, these can be achieved only through a set of specific actions - the tasks and functions - which constitute an important intermediate factor between the organization's structure and its aims. Senior port officials, knowing the objectives set for their port system, should deduce from them, through systematic analysis of the technical aspects of the transit of goods through the port and the requirements of the port system's customers, a list and a definition of the tasks and functions to be performed. It is worth mentioning that in all ports having comparable features, the list of these tasks and functions is roughly identical. However, the distribution of these tasks and functions among the various persons and entities involved in the port system is virtually never the same from one country to another. The determination of this distribution is one aspect of the organization of a port system which will be examined in the next chapter. The performance of the functions is facilitated by the use of methods, systems and other management "tools" which will also be examined later.

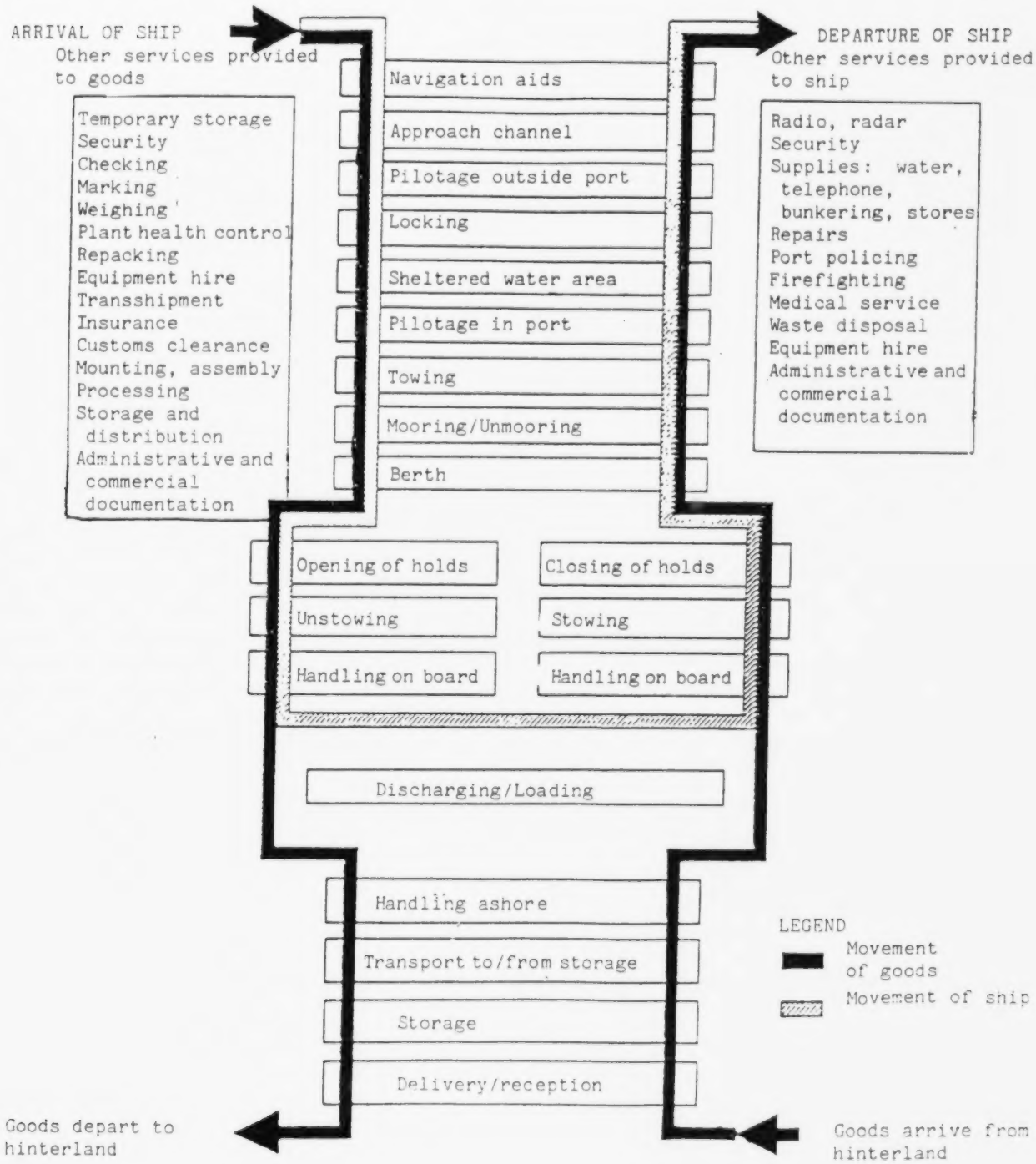
63. A distinction is made between two major groups of port functions. One consists of functions performed directly for the port's users or customers. These are the operational and administrative functions. The second group consists of the functions internal to the port system and designed to help its operation: these are the economic, financial, social, commercial and development functions. When an observer seeks to determine a port's functions, he sees only the first-mentioned functions, which correspond to the various services provided or offered by the port. The first group may be called "external functions" and the second group "internal functions". Figure 1 shows the principal external functions (operational and administrative functions) of a port.

### (1) External functions

64. The principal external functions of a port may be divided into three main groups: port functions for ships, functions performed at the sea-land interface and functions ashore. In the first group are the normal services provided to ships upon their arrival at a port: pilotage, towing, inshore pilotage, etc. As port calls are becoming increasingly short, these functions must be carefully planned if they are to be performed satisfactorily. Many ports have therefore introduced computerized systems for following the activities relating to each ship throughout its call at the port. The necessary information is obtained from the shipping agents and from the harbourmaster's office (for example, on a ship's arrival form). This information is then processed by computer and communicated to all the parties concerned. For further details the reader is referred to the UNCTAD studies on computerization of port data (TD/B/C.4/AC.11 and TD/B/C.4/AC.11/Supp.1 which describe in detail a system for monitoring ships while they are in port).

Figure 1

Principal operational and administrative functions of a port



65. One of the principal functions carried out at any trading port, namely goods handling, takes place at the port-land interface. Handling cannot nowadays be performed with the required efficiency, speed, accuracy and quality of service, while observing the safety rules applicable to persons and goods, without recourse to the development and application of integrated operational systems which define accurately the flows of goods, equipment and information, as well as the rules governing use of the port areas. These systems must apply to all the operations performed, from the hold of the ship to the point of exit from the port. They must avert, or rather must plan and organize, any break-bulk operations.

66. The functions of the third group are those which are performed ashore, in the port hinterland and, increasingly often, outside the traditional port area. They involve providing for the goods a range of services commensurate with the current requirements for efficiency, quality of service and low cost that are imposed by international trading under the pressure of competition. These services include storage, distribution, processing, labelling, packing, etc. A primary service, which contributes to the efficient performance of the others, is the collection, processing and dissemination of information concerning the goods and their physical, commercial, financial, customs and other particulars. These data are transmitted upstream (ashore) and downstream from the port (alongside) to the other participants in the transfer chain. The progress which has been made in both telecommunications and data processing has made it possible to reduce and even dispense with the circulation of documents and to replace it by electronic data exchange methods which dispense entirely with the use of paper.

(2) Internal functions

67. For a port system to function efficiently, it is obviously not sufficient to take only these external functions into account. There must also be other internal support functions which will contribute to the best possible performance of the external functions, in other words, ensure achievement of the best possible quality/cost ratio and also ensure that the port anticipates external changes and develops. The first of these internal functions is the economic function, since the primary aim of a port is to offer the best possible quality/cost ratio for the transit of goods through it. Here the port users are concerned with three criteria: the cost of the operation, the time it takes and the risks involved. The economic function must be organized in such a way that these criteria are satisfied. This means that the operating decisions must be correctly defined and be taken and carried out rapidly. This calls for efficient organization. Port activities must therefore be organized efficiently and harmoniously so as to ensure high productivity. The port system must be capable of monitoring and controlling the economic, technical, social, legal and even commercial risks faced by the port users.

68. Economic functions and physical functions are often two different aspects of the same activity, which are expressed or measured in the former case in physical terms (or units) and in the latter case in economic or financial terms or units. Thus, in the case of the functions involved in receiving ships in a port, reference will be made to the number of vessels calling,

their tonnage and flags, the volume or weight of their cargoes and the number of containers, whereas under the economic approach, the criteria and units will be those of cost, time, earnings and productivity.

69. Financial functions are directly linked to the port's objectives in this area, the aim being to ensure that the principal monetary and financial flows are balanced not only to permit development of the port, but also to ensure the maintenance of existing port facilities. In both cases this often implies a need to take account of foreign currency requirements and to ensure that the inward foreign currency flows (e.g. tariff revenue) and the outward flows are balanced. In the case of a port system where the State exercises a major influence, the financial functions may not be well understood if the rules laid down for the calculation of capital costs and provisions do not always take account of economic criteria. It is necessary to avoid a situation where, although the accounts are administratively balanced and the revenue is sufficient to cover operating costs, the revenue is nevertheless insufficient to provide the resources needed for the port's development.

70. The social functions are not easily carried out in a port where many of the workforce live and work under difficult conditions, because their employment is made precarious by technological developments and because of the special nature of cargo-handling operations. They are nevertheless essential if the other functions are to be performed efficiently in a harmonious and favourable climate. The social function consists in ensuring satisfactory health and safety conditions for the port workers, assuring that they have adequate accommodation and a reasonable social life and standard of living, not to mention adequate social welfare (provision for sickness and retirement).

71. In the last 20 years the commercial function has become a driving force in those ports subject to strong competition and keen to develop. Of all the internal functions it is the one most clearly oriented towards port users and falls on the borderline of the external functions. It permits enhancement and a better knowledge of the other internal functions, whose ultimate purpose is to ensure port services of high quality that will satisfy the port users. The commercial function should be centred on the following objectives:

- Ensuring that the port's existing customers are satisfied with the services offered;

- Informing the shipowners and shipping agents using the port about port facilities, services and capacity. This is the traditional "static" approach;

- Seeking additional traffic by contacting potential customers and endeavouring to convince them to export (or import) goods and to make use of the port for that purpose. This is the dynamic approach which many ports have adopted by substantially strengthening their marketing services.

72. The last function to be considered is the development function. There are several basic reasons why in the organization of a modern port the highest priority must be assigned to the development function. The context in which a

port operates is subject to constant change because of its technological, economic and social environment. Over time there are changes in commercial practices, in conditions and means of transport, handling and storage and in the related administrative and financial arrangements. Moreover, increasingly strong competition has developed in many markets and there is scarcely any port in which it is absent. Whether extensive or limited, national or international, within or outside the port, and whatever the mode of transport involved, competition is always a factor that stimulates trade and economic activity. The need for sites and for coastal and onshore infrastructure that results from this function are not the only demands made on port areas. Other industrial activities or urban planning or leisure developments may be in competition with port activities and may occupy the port area to the point where any extension of the port is impossible. Great vigilance is therefore necessary. The development function must proceed in several phases, as indicated below.

(a) Information and feedback

73. The organization must be in a position to know of any changes occurring around it that may facilitate (or hamper) attainment of the port's objectives. In other words, all information concerning the evolution of the port's environment must be transmitted to the organization as rapidly and as fully as possible. Such information may come from port users, suppliers, government authorities, competitors, employees of the organization, the media, research reports, etc. Transmission of information must be provided for in the organization and should never be left to chance.

(b) Research, planning and forecasting

74. Once information has been received, the organization must process and analyse it and also learn from it in order to make timely preparation for development of the port. It is not unrealistic to look ahead for a period of 15 to 20 years because some 10 years are needed for proposing, planning, deciding and implementing a major port extension. This function is all the more important as similar changes in the environment may affect the port's functioning differently, because of special situations. The research capability may be under the port itself or be carried out jointly with other ports or through recourse to outside consultants, where the port organization is relatively small.

(c) Self-adjustment and coordination

75. After having studied the new situation and drawn up proposals, the organization must then prepare to implement them. At the organizational level, this preparation consists in making structural adjustments in manpower, relationships, etc. In some countries, the port organization structures remain unchanged for decades even when there have been substantial changes in the environment. Inability to adapt to changes sometimes constitutes a very serious problem for the port organizations of certain developing countries. Useful proposals are regrettably not acted on. The self-adjustment function can therefore be said to be one of the most important functions for port development. Self-adjustment capacity is one of the best indicators of

efficient port organization and of the personal capacity of the port's managers to carry out development. Collecting and analysing information and developing therefrom proposals for action is a task which may seem complex but which mainly requires the application of method. The information will then indicate only one direction in which to proceed. However, the practical utilization of the results of analysis is a much more difficult matter because it involves not only much more work, but also difficult decisions and sometimes modification of relationships, habits or practices that is not readily accepted. This is why, when structuring or restructuring a port organization, it is essential to pay appropriate attention to the organization's development function.

76. A good port organization should also provide for carrying out the function of coordinating activities. Although port activities are highly specialized and involve a fairly advanced form of division of labour, they are increasingly linked with other activities which take place outside the port. These links have become closer as integrated transport has replaced traditional transport. Modern ports have to deal with many more relationships and activities than did ports in the past. Today, a port's efficiency depends on the port organization's ability to ensure coordination of the various interests involved, both within and outside the organization.

## C. Port organization structures

77. The purposes or aims and the functions of a port system having been defined, it is then necessary to ensure that the system has appropriate structures, both at the national level and at that of individual port areas, which will ensure that the functions are carried out in the best possible manner. Only by this means can the purposes of the system be fulfilled. The principal port functions being identical for ports of a given size, it might be thought that all ports will have comparable internal organizations and structures. In practice, however, the various functions and tasks are organized, distributed and structured differently from country to country, and often even (but to a lesser degree) within a given country. This is owing to the fact that all port systems do not have the same purposes or aims. The existence of different schools of thought in this area (the microeconomic and the macroeconomic approaches) has already been noted. There are also other factors, foremost being the prevailing political system. This factor will impose a number of unavoidable constraints. In a centralized economy, for example, all port services are run by one or more ministries, or in other words by the central government. Another major factor is the weight of history and of traditions (and structures) inherited sometimes from a distant past and which are so entrenched that they cannot easily be modified. This is the case in some former colonies many of which have adopted a system of division of port functions based on those of the former capital but the system remains in force for decades after independence. There is also the influence of former regimes where the Customs service, and sometimes the navy, played a key role in port operations. The effects of this are still felt.

78. It is therefore often a difficult and lengthy task to introduce changes in the structures and organization of a national port system or of an individual port area. On reflection, it would seem that the primary reason

for this situation is the fact that ports are places where the social climate is never definitively peaceful and where any change in existing balances may give rise to serious conflicts that may compromise the port's functioning and development through the transfer of traffic to other more peaceful or reliable ports. However, these somewhat negative comments are not sufficient reason to make no effort to improve port system structures.

(1) Some general principles of port organization

79. The following general principles apply to all organizations having economic activities and therefore also to port systems. Any economic organization consists of what may be called "components" or, to be clearer, "units". A component or unit is a group of persons who have been organized for the purpose of performing specific tasks or functions. In a port, for example, a cargo-handling enterprise or a warehousing enterprise is an organizational unit of the port, just as an accounts or planning department is an organizational unit of a port enterprise.

80. The activities of an economic system - in this case a port system - may be divided into three categories: activities producing results; support activities; and management activities. Port activities such as cargo handling and services to vessels are activities that produce results. Maintenance and staff training are support activities. The following principles should therefore be applied:

- Support activities should not be integrated with activities producing income and results;

- Separate activities making the same contribution to the result can be integrated so that they form a single unit in the organization;

- Activities which make different contributions should not be integrated.

Thus, in a port system, it is worth integrating the different cargo-handling activities, whereas support activities such as training and maintenance should be separate.

81. As for the size and form of each unit or component of the organizational structure, only several very general rules may be proposed. First the structure must be as simple as possible. The forms of the units may vary depending on the level within the organization and the particular activity involved. Since there is obviously a direct link between organization and function, the best solution is to adopt a functional organization, in other words one so constructed and structured that the components or units are organized on the basis of the functions they perform. The size of a component is determined by the nature of the functions. For example the inshore pilotage function requires only a small number of personnel. The container-handling function, on the other hand, will extend over an entire terminal and will require a considerable number of staff and specialized equipment. It is preferable, in some cases, for the components to be organized differently on the basis of the "team work" system. This applies to activities such as research, innovation and management. In the case of

research, for example, there is no specific function, but a goal is set and a subject is selected. A team may be set up composed of persons who are skilled in various fields. They will work together for a specific period in order to achieve the desired goals in the best possible manner. In a port it is worth using this form of organization (which may extend over several enterprises) as it is well-suited to the requirements of port modernization and the preparation of port development.

82. Among all these activities, it is always necessary to identify the key activities which play a vital role in the performance of the task or the achievement of the priority objectives. Thus, in a traditional port, cargo handling (ship/shore or shore/ship) is the key activity, while in a transshipment port it is transshipment - the cargo handling necessary for the discharging or loading of vessels - which is obviously the key activity. Key activities should never be made subordinate to other activities. Revenue-producing activities should never be subordinated to non-revenue-producing activities. The relationships or links within the organization must be simple. There must be as few levels of command as possible.

83. This touches on another important principle of organization: preference must be given to decentralized decision-making. The number of levels between the decision makers and those who carry out the decisions will determine the efficiency of the organization. Decision-making must be decentralized to those levels which possess all the information necessary for the taking of decisions. In this connection the reader is referred to the UNCTAD study entitled "Port Administration and Organization: a noteworthy experiment in Morocco" (UNCTAD/SHIP/627).

84. A sound organizational structure should therefore have the following characteristics: (a) It should be clear. The structure should be clear, with defined responsibilities and objectives for each unit, as well as well-defined relationships between units. The same activity should never be entrusted to different units. (b) It should be stable. The structure, once set up, should be stable and should have competent staff for each job. There should be no radical modification of the structure unless the conditions for performance of the activities have substantially altered. (c) It should be functional and allow the organization's functions to be carried out under the best possible conditions. (d) It should be adaptable. Technological and economic conditions alter daily. The organization's structure should therefore allow the enterprise to anticipate change and adapt itself rapidly and fully. (e) It should be flexible. Changes in the market may sometimes occur. It must also be recognized that exceptional circumstances may arise at any time. Flexibility is a major organizational asset which will enable enterprises to function efficiently. (f) It should provide for communication. It is crucial for the efficiency of an organization to ensure effective internal communication, which means that the organization's structure must be simple.

85. A good organization will be recognized by its ability to ensure that the material, human and financial resources available to it are used in the most effective manner possible. The need to achieve economies of scale makes it desirable to have larger components or units, whereas the need to have few hierarchic levels militates in favour of small enterprises. A good organization will be one which is able to reconcile these two extremes.

(2) Port system structures at the national level

86. These structures too must be functional, which means that, in order to define and organize them correctly, it is necessary to identify the basic functions of a country's port system. The system must:

- Perform the public service task of serving foreign trade in the interest of the national economy;

- Make the country's ports an effective land development tool by enhancing the economic potential of coastal areas, while promoting the development of the hinterlands they serve;

- Play, in this way, a positive social role by maintaining or creating employment and by helping to improve the living standard and conditions of the port areas.

87. The port system's public service role of assisting foreign trade and its importance from that standpoint for the national economy mean that the State is of necessity involved. It is the State, therefore, that is responsible for defining the policy with regard to ports, in the same way as it establishes policy for all the other major economic sectors. Therefore, the State must define the ports system which it wishes the nation to have. Just as it must take decisions regarding all the major infrastructural works which directly and substantially affect the national economy and land use, it also must decide on the establishment of major national port centres (i.e. those centres whose hinterland covers a significant part of the national territory) and to establish the principles for their operation.

88. The State must undertake medium-term and long-term planning of these centres in order to be sure, not only that the port system will function satisfactorily for the economy at the time when the decision is taken, but that it will also be capable of adaptation to changing economic conditions. These decisions do not consist of specifying what facilities are to be provided at each port site, nor of defining in detail the methods of operation and specifying how the operators are to be organized or the everyday relations with the port users.

89. At the material level the State must choose the sites for major port centres and for the major works and equipment which will determine the national function which the ports will perform. Thus, the general features of the outer port works and approaches will determine the size of ships which the ports may receive and thus the nature and magnitude of the port activities (a major industrial port cannot be served by vessels of only a few thousand tons). It is not at this level, however, that the port's internal equipment should be decided upon (the mere provision of additional berths for ships will not change a port's vocation).

90. As regards administrative, legal and economic decisions, the State must decide on the manner in which the major port centres are to be established and operated. In addition to decisions relating to the national economy (tax questions, the tariff system, competition, etc.), and those concerning the country's social policy and its policy in the areas of security and the

environment, the State must include in its port policy considerations that take account of the special nature of ports. Thus, it must define the status of ports from the standpoint of State property, a particularly important question having regard to the space requirement dictated by the increasing size of ships, as well as the commercial function ports are to perform and the desirability of locating in them industries whose activity is linked to the transport of large quantities of goods. Labour legislation and health and safety regulations must also be adapted to take account of the manner in which port activities are conducted.

91. More generally, the State must establish the "rules of the game" to be observed in relations between the Government, the operators and the users. From the macroeconomic standpoint, for example, the State must establish principles of financing the major structural works. When deemed necessary to participate in the financing, the State must fix the apportionment of costs between taxpayers and port users. It should be noted that in some countries favouring the "microeconomic" approach, as for example the United Kingdom, the very concept of ports having a public service role of serving the nation's foreign trade is not accepted. In defining the national ports policy, the State in such a case treats ports in the same way as other commercial enterprises (see annex IV).

92. Table 3 shows the methods of financing the cost of public investment in ports by the United States publicly owned ports. The outlay concerned is for breakwaters, quays, cargo-handling equipment, warehouses, buildings, etc. Between 1946 and 1989, the United States publicly owned ports sector invested US$ 10.5 billion, while the private investment was of a similar magnitude. Between 1979 and 1989, 5.6 billion US dollars were invested.

Table 3

FINANCING OF INVESTMENT IN PUBLICLY OWNED PORTS
OF THE UNITED STATES OF AMERICA

Expenditure by source of financing of investment
(in thousands of dollars for the period 1979-1989*)

| | Port revenue a/ | General bonds b/ | Bonds guaranteed by port revenue c/ | Loans | Grants d/ | Other |
|---|---|---|---|---|---|---|
| Total | 1 903 950 | 590 857 | 1 078 022 | 98 237 | 99 845 | 22 198 |
| Percentage | 47 | 14.8 | 27 | 2.5 | 2.5 | 5.6 |

Source: United States Port Development Expenditure Report, February 1991, Office of Port and Intermodal Development.

* No information was obtained in respect of expenditure amounting to US$ 1.6 billion.

a/ Port dues and charges, rents, concessions.
b/ Bonds issued by the State or the local government and reimbursed from taxes.
c/ Bonds guaranteed and reimbursed from port revenue.
d/ Contributions from the State or local governments.

93. The State has governmental and administrative machinery at its disposal with which to organize the national port system. Depending on its philosophy (and policy) in this area, the State may choose between the following two approaches:

- Under the "microeconomic" approach, in which the ports function entirely autonomously without any significant public intervention, the national structures required are light in character and do not necessarily come under a single ministry responsible for ports. One ministry may be responsible for land-use authorizations, another may be responsible for police and security matters, while yet another may be in charge of international port matters. The various ports organize themselves in order to cooperate in fields where this is in their common interest, for example, in promoting domestic traffic, in training, etc. As has already been pointed out, such systems call for a high degree of development and maturity, including that in the private sector.

- Under the "macroeconomic" approach, one element of this governmental and administrative machinery must have responsibility for the country's port system, to draw up the policy for this sector (which must be formulated by the Government as a whole) and then to implement it. More specifically, at the administrative level, the organization must have a central structure, which may be called the directorate of ports or of port affairs. Its role is to prepare and implement governmental decisions, acting in liaison and in coordination with all the other administrations concerned (inland transport, industrial development, etc.), because the port policy must be integrated within the country's overall policy. The port system cannot function outside the laws and regulations generally applicable to all sectors of the economy.

94. Some small countries have seen fit to combine the ports directorate with the shipping directorate and sometimes with the air transport directorate. Such central services are useful because, whatever the ministry responsible for ports (transport or public works), the Government will have to take some decisions (e.g. setting investment priorities, approving increases in charges) and have studies carried out, which implies a requirement for data, statistics and competent personnel.

95. The size of these central services and their terms of reference will depend on the degree of control exercised by the State over its ports. The general tendency observed by UNCTAD in the developing countries, and in Africa in particular, in a UNDP-financed study entitled "International Development and Human Resources Management in the Ports of Sub-Saharan Africa" (RAF/89/028) revealed that this interface between State and port was excessively burdensome and restrictive, nullifying many initiatives taken and efforts made at the local level, by the management in particular.

96. Another approach which proved in some measure successful during the 1960s was that of setting up a national ports board where the principal internal functions (economic and financial functions, development, commercial function, etc.) were the responsibility of the board's national headquarters,

while the external functions (operational, administrative, etc.) were decentralized and carried out in the various ports where the board then played the same role as a port authority. This approach has the great advantage of providing a solution to the particular problem of small ports, which do not always have the benefit of the attention and interest which the country should accord them, particularly from the standpoint of regional development. For systems of this kind to function well, the various regional or local ports must be given by the headquarters of the ports board not only responsibility for certain operations, but also the necessary resources and powers for carrying them out. One variant of the national ports board system consists in setting up regional offices (or port authorities) that have responsibility for only a part of the territory and therefore cohabit with other ports with which they are sometimes in competition. The study on Morocco ("Port organization and administration: a noteworthy experiment in Morocco" op. cit.) provides an example of the organization of such a national board.

(3) Structures of a port area: Adoption of a functional structure

97. The external functions performed in a port area are the result of either:

- Governmental action (measures taken by the police, the Customs, departments responsible for safety of navigation, health, industrial safety, etc.); or
- Industrial and commercial activities (e.g. assistance in ship manoeuvring, cargo handling, storage, transit, pre- and post-shipment carriage, etc.).

98. Consequently, one of the first principles of organization of a port area is that it must be based on a logical division of functions between:

- Public bodies which normally have to exercise governmental powers; and
- Operators which perform activities of an industrial and commercial nature.

99. Another fundamental principle is that the requirements of the functions to be performed must be satisfied. Thus, the "handling" function, which is a key port activity, requires that there be continuity in operations from the ship's hold, through transfer to shore, up to delivery. This function should therefore be entrusted to the same operator, which must organize itself by dividing its operational services in a direction perpendicular to the quay, following the pattern of the handling operations. There must be one single person responsible for these operations, from start to finish. In some ports, unfortunately, neither of these principles is applied, particularly in the case of general cargo handling, so that delays, losses, incidents and higher costs inevitably result.

100. The same principle applied to the port promotion function would require that this function be performed by all the parties involved, i.e. the members of the port community, and not entrusted exclusively to administrative departments (e.g. the port authority departments), which are not parties to the commercial contracts. Fortunately, it is increasingly common that the port community and the port authority work jointly to promote the port.

(4) The need for a port authority

101. Must the central administration, in its governmental authority role, intervene in the port area itself? Many government decisions relating to ports are contingent on the physical and human geography of the local area. For the decisions to be effective, full account has to be taken of these fundamental local factors and the governmental intervention must therefore be as close as possible to the people and places concerned, which implies the need to establish a port authority. This authority (some countries prefer the term "port administration") then has responsibilty for a given area or areas in which the major port centres that are vital to the nation are located. This also applies to port centres of local importance. Such an authority is needed to establish the port centre's overall development plan in order to make the best possible use of the space available, both in the sea area and ashore, having regard to the other demands on this space for human activities or for protection of the natural environment.

102. The reservation of space, as well as the construction of certain works, cannot be left to individual initiative. Thus, approach channels, breakwaters and similar works, manoeuvring areas for ships and harbour water areas, transport links between the port and the hinterland transport network - works which are of obvious public benefit and for which planning determines the possibility of providing and operating the structures and equipment within the port - must be constructed and run by some body invested with governmental powers. Although the planning and execution of these works are inherently industrial and commercial activities, the decision to undertake the works and the choice of their site are actions of a governmental nature, having regard, in particular, to their consequences for the port centre's use and for its natural and human environment. As far as the operation of the port centre is concerned, the port authority will be responsible for organizing and implementing the policing of ship movements and the movements of other vehicles within the port and for regulating the functioning or use of public facilities, port approach works and, more generally, the overall functioning of the port centre.

103. The allocation of space within the port centre among the port operators and users must also be made by a public authority. The usable space being limited, making it freely available would rapidly lead to a disorderly situation or to certain parties gaining a dominant position, situations which would be incompatible with the role that the port must play in the service of the national economy. The allocation of space must therefore be carried out in a manner defined and controlled by the port authority. More generally, the port authority must ensure that the construction and operation of port works, which allow traffic to pass through the port, contribute to fulfilment of the purposes assigned to the port by the State.

104. The port authority must also perform the task of coordinating the various activities which take place in the port (which does not in any way mean that it must necessarily play a part in performing them); the authority must likewise ensure that these activities are carried out in accordance with

the laws and regulations and that they contribute effectively to the implementation of the national port policy. In order better to meet the demands of the market and to make the port area a genuine logistic centre for trade, the port authority must encourage, facilitate and sometimes organize the port community. A more detailed description of these matters will be found in the UNCTAD study "Port Marketing and the Challenge of the Third Generation Port" (TD/B/C.4/AC.10/5).

105. In order to exercise these powers, the port authority must have the necessary financial resources. In defining the port system - a State action - the State must have laid down the relevant principles. It is the responsibility of the port authority to procure the resources needed. In doing so, it must ensure that its decisions, particularly regarding the financial participation that is sought from the port operators and users, will contribute effectively to achievement of the aims of the port policy - in other words, that they will be in the interest of the traffic using the port. This activity calls for concert between the port authority and the bodies responsible for all the activities that take place in the port area, as well as with the authorities responsible for the natural and human environment of each port.

(5) The various forms of port authority

106. The existence of a port authority is not incompatible with the application of microeconomic theories to a port. In this particular case it will be seen that, since the port must be self-sufficient, the principal functions it has to perform are generally grouped together so as to achieve the "minimum critical level" below which profitability is no longer possible. The entity thus created plays the role of port authority because it has in fact been so mandated by the State. In the other possible cases are to be found the three principal types of port authority, known as "landlord-port", "tool-port" and "operating port".

(a) The landlord-port

107. The powers of the port authority in this case may be limited to the activities listed in the previous paragraph, namely decisions concerning land use, reservation of space for the port areas and construction and use of public port works, such as those already mentioned. The port authority leaves it to "individual" operators (public sector or private enterprises) to construct and operate the works and equipment necessary for the operation of ships and the storage and internal transport of traffic, and to operate the other services provided for traffic (sea pilotage, towing, inshore pilotage, etc.). It makes the necessary sites available to them on the basis of contracts specifying public service obligations or, conversely, permitting private use of the facilities. In this case the port authority acts like the owner of the port property, grants short- or long-term leases or concessions of land or transfers of land (the latter is not recommended) and performs other activities for the purpose of ensuring optimal functioning of the port facilities.

(b) The tool-port

108. The tool-port is a variant of the "landlord-port". It may be considered useful to entrust to the port authority the execution of works other than those mentioned above, including ship control stations, handling equipment, storage area and warehouse equipment, equipment for ship repair and supply, etc. In France and in several African countries it is the port authority that purchases and installs certain heavy handling equipment (gantries, cranes), which are then run by the port operators.

109. This practice may prove necessary if the local geography or volume of traffic makes it physically and/or economically impossible to have a large amount of equipment or to operate it satisfactorily. Sometimes an operator with the necessary space for such equipment may not be able to install the right equipment or may be in a dominant position or even have a monopoly, because the space available is inadequate to permit the siting of other competing activities.

110. In such cases, the port authority will be performing its role by financing, building or purchasing the works and equipment necessary for efficient operation of the port and making them available to the operators under short-term contracts generally incorporating public service obligations. The port then plays the role of a "tool-port", as it has created the "tool" but does not operate it.

111. The "tool-port" role does not preclude the landowner role. If, for example, there is sufficient space available, the port authority may combine both functions itself, providing certain works or equipment, which are then used by certain operators, and entrusting the provision and operation of other works and equipment to other operators.

(c) The operating port

112. The port authority may consider, not only that it should provide certain works and equipment, but that it should also act as their operator. It may also consider it to be in the public interest that it should in itself set up and operate certain services for the port traffic. Like the other operators, it then maintains direct industrial and commercial relations with port users, while retaining its governmental powers vis-à-vis the port community. It is then called an "operating port". Operating ports normally form part of the public sector. The current trend in certain countries towards privatization of ports will lead to the formation of private sector operating ports.

113. As in the case of the tool-port, the operating port's role may be concerned only with certain port activities, the others being carried out by operators separate from the port authority. The port authority may also consider it desirable to play a role through enterprises separate from itself in which it holds a majority or minority of shares. This formula allows the port authority to make a clear distinction between its governmental role and its role in performing industrial and commercial activities. Such a policy seems advisable whenever the port authority considers that it should also perform an operating role.

114. Should any particular form of port authority be favoured? In answering this question, common sense should be the guide and the same basic principle should always be observed, that of ensuring the best possible performance of the port functions.

115. In those countries where the operators are experienced, competent, financially sound (and prepared to reinvest their profits in the port) 2/ they are often the ones best qualified to perform the cargo-handling functions. A landlord-port-type solution therefore seems preferable; however, there should be a port authority representing the Government and carrying out the main governmental functions (which have sometimes been called the hard core of port functions) namely: provision of basic infrastructure, allocation of land to operators, policing and security, establishment of rules and by-laws, development, coordination, etc.

116. In contrast, when the operators are dispersed, inefficient or unreliable, or where the port's traffic volume is too low, the "operating port" solution seems to be the one to adopt, temporarily at least, by setting up, if possible, subsidiaries of the port authority. It has been found that, unlike the "landlord-port" which, thanks to competition, embodies in itself the seeds of efficient operation, the "operating port" in the public sector has an intrinsic tendency to evolve towards structural hypertrophy and overstaffing. There is thus a need for particularly strong management with government support if the necessary efficiency is to be achieved. The "tool-port", for its part, may be viewed as being at an intermediate stage of development towards becoming a "landlord-port". This is because it is the entity operating the port that should select, and where possible finance, the port works and equipment, even those of a "heavy" nature.

117. There is a further question to be considered. Can a single port authority be made responsible for several ports? Such a solution may be useful since it permits a regional approach to port development, by freeing the main port, which is often too close to a city and choked with traffic. This solution avoids the need to move towards the much more cumbersome ports board structure. It is a solution that may be useful for countries if some ports are too small to perform full port functions by themselves (including training, research, marketing, etc.). The choice of the number of ports to be placed under the same port authority will depend on such factors as: the country's size; the geographical origin, destination and volume of traffic generated by the economy; and, the structure and condition of the shore-hinterland communications network.

118. Common sense should dictate the choice of solution. The port authority will carry out its tasks in the public interest all the more efficiently if its decisions do not favour or run counter to the interests of the port operators and users by distorting competition. The risk of this happening will be reduced in the case of a port having several locations because the traffic handled at each location will be different from that at the others in its nature, origin and destination. When "multi-port authorities" are set up, the power of decision-making (prospecting for traffic, management, operational and financial objectives, etc.) must be delegated as far as possible to local authorities, who must be given the means of exercising it.

(d) The structure of a port authority

119. Whether or not the port authority engages in activities of an industrial and commercial nature, its role as the Government authority for the port establishment requires - except in the special case mentioned above - that its structure be public in character. Where its role is confined exclusively to the exercise of governmental powers, the port authority may be, as it were, a local branch of the State Government. However, it is preferable to plan it in the form of a structure having the status of a body corporate with financial automony.

120. This solution makes the port authority more readily identifiable and thus more responsible. It also allows the authority's role to be extended to include industrial and commercial activities, should any operator or operators cease business. This would not be possible if the structure were purely administrative in character. Above all, the setting up of an autonomous structure enables, at the institutional level, participation by other public authorities, professionals and users concerned in the daily activities of the port authority - a good way of establishing and maintaining among them the dialogue that is necessary for the efficient functioning of the port.

121. A vital matter for the port's operation and development is the composition of the port authority's deliberative and decision-making body, generally its governing board. There are several schools of thought on this subject. Some maintain that neither the port users nor the port personnel should form part of this body. Instead they advocate the setting up of additional consultation machinery through which the point of view of these parties may be expressed. Others consider that these parties should have a place on the governing board, but that their weight or voting power should be limited so as not to prejudice decision-making on vital operational and development issues. Another question to be settled is that of the representation of local interests or institutions, as distinct from the national institutions or ministries which often are represented on the governing boards of port authorities.

122. Advocates of the macroeconomic approach hold that the public or State interests should have the majority of the seats on the governing board, so as to enable the Government, acting in the public interest, to ensure that the decisions taken, favour the port community and contribute to achievement of the country's port policy objectives. Those favouring the microeconomic approach consider that there is no a priori requirement for representation of the country's public sector on the governing board of a port authority. This would seem natural since, in this case, the port is an enterprise like any other and may even belong to the private sector (a case in point being the Associated British Ports in the United Kingdom).

123. While it is not possible to specify the optimum composition of such a body, it is desirable that the voice of the following parties be heard:

- The State, the local authorities and the governmental economic agencies responsible for the area in which the port is situated;

- The users whom the port serves (not only those based in the port itself, but also those in the close or distant hinterland);

- The operators whose activities are carried out in the port;

- The employees of the port authority and of the various professional firms operating in the port;

- Persons qualified because of their competence in the economic, commercial, social and other fields. Some countries have expanded this group to include trade union representatives, not to represent the interests of the user or worker groups, but to give the governing board the benefit of their experience and competence.

The need to strengthen the port's commercial and development functions is one reason for giving greater weight to local than to national representation in the governing board.

124. An effective way for the State to respect the port authority's autonomy while nevertheless remaining sure that it will always act in accordance with the State's policy on ports consists in delegating to it a representative of the Government (government commissioner or financial controller) whose role must be restricted to verifying that the decisions taken by the port authority are consistent with the country's laws and regulations and with general policy, without any intervention in everyday management, i.e. in questions of a technical, economic or commercial nature. Such questions must be left entirely to the port authority, which must assume full responsibility. The question of the internal organization of a port authority will not be examined here as this relates to port authority management, a topic that will be dealt with later under the heading of port management.

(6) The public sector and the private sector: privatization

125. There is currently a marked tendency towards greater participation of the private sector in the operation and development of ports. Three main arguments are advanced to justify the privatization of certain port functions:

- Extension of the range of services offered to users and expansion of traffic - A public administration or department is not generally in a position to give port users all the commercial and industrial services they may need. Sometimes the legislation in force does not permit this. When the (private) users of the port are involved in the establishment and management of the port installations, their fidelity to the port is enhanced, along with their motivation to secure traffic and to adapt the port's facilities to the customers' needs;

- Augmentation and facilitation of the financing of port works and equipment - The construction works and heavy equipment in ports cost a great deal. Governments throughout the world are seeking ways of avoiding having to bear the costs involved. Private capital is frequently sought, either to supplement public financing arrangements or to ensure the total financing of certain port installations or equipment that are operated by private concerns;

- Enhancement of management efficiency - A private port operator has greater freedom to recruit (or to dismiss) staff and to pay it. It is better able to resist external pressures. It must operate efficiently or measures will automatically be taken to remedy the situation, for a private enterprise cannot operate at a loss. However, a public port enterprise may also be highly efficient. A case in point is that of Singapore. UNCTAD has published a study of an efficient public port enterprise in Morocco. However, there must be a very strong management effectively supported by the political authorities. There are unfortunately many examples of public port enterprises that are inefficient, yet measures have not been taken to remedy that situation.

126. Privatization, nevertheless, involves some risks. It may lead to monopoly or oligopoly situations that exclude competition, place greater emphasis on profit than on production and favour collusion with certain users. It may result in lower costs for the operator but not for the user.

127. What are the criteria on which the State (or the local authorities), when organizing or reorganizing a port, must base their decision to entrust certain port tasks or functions to the private sector rather than to the public sector? One criterion should obviously be the achievement of better performance of the port functions with a view to achievement of the port objectives. This is not always the case, in practice, however. In the field of ports, as in others, there are "fashions". Privatization is currently in fashion and some ports which are confronted with many difficulties consider - wrongly - that only privatization will resolve those problems. If there is a tendency to privatize certain port functions, this is certainly because there have been excesses in the other direction and the State has become involved in the performance of operational and commercial functions, dealing with them in too administrative and bureaucratic a fashion. The first word of advice that can be given in this area is not to err in the opposite direction and seek to privatize at all costs.

128. The procedure to be adopted in this matter could be the following one, which might be called "privatization à la carte". In doing so it will be necessary to proceed methodically and to examine one by one all the port functions to see which ones need to be performed by the public sector (the port authority). These functions constitute the "hard core" of the public sector's area of competence with regard to the port. Subsequently it will be necessary to define the "peripheral" functions that are best performed by the private sector. Between these two extremes there are functions which may be performed either by the public sector or by the private sector. The art of port organization consists in choosing the "dosage" best suited to the national interest, without being too doctrinaire or too hasty, because it is necessary to ensure that the necessary changes can be made in the form of organization adopted, in order to correct for any errors.

129. Once the functions to be privatized have been determined, it is necessary to see whether certain economic, financial and technical conditions are fulfilled. The first step is to ensure that the private sector is of sufficient maturity to cope with its obligations, which, in respect of certain functions (cargo handling) constitute a considerable burden. The investors

must be financially capable of investing and reinvesting part of the profits in development of the port (instead of exporting the profits abroad as is done in certain regions). The private sector must possess skilled personnel and must adopt a policy of human resources development that will enable it to cope with its subsequent obligations.

130. Consequently, if the country has not reached the stage where the private sector is fully capable of playing its role and, in particular, of undertaking the necessary investment, the establishment of companies with both State and private capital is a satisfactory transitional measure. In certain small countries and for activities such as cargo handling, which now require heavy and costly equipment, family-scale private operators are not by themselves able to undertake the investment needed for efficient operation of the port. It is therefore necessary for them to join forces. Sometimes the State or the port authority may take over part or all of the task. There are also some ports where the port authority has encouraged the establishment of mixed-capital companies in which it participates, together with private partners, in the operation of container terminals (including the financing of the heavy terminal equipment needed).

131. The privatization of certain essential port functions, such as cargo handling, must imperatively be accompanied by measures to ensure free competition, for otherwise monopoly situations will be created that will be prejudicial to the proper performance of the functions concerned. In very large countries where the level of economic development makes it possible to entrust many port functions to the private sector (e.g. in the United States of America), regulations have been adopted to avoid any abuses (regulations concerning monopolies, the environment, etc.). The risks can be minimized by using incentives that are compatible with the port's aims (concession fees that are degressive when the port traffic increases and, conversely, penalties when the port installations are under-used), by controlling the tariffs applied by and the performances of the private sector (through competition or by administrative measures) and by limiting the possibility of any monopoly (reserving some quays or facilities for general public use, encouraging competition, etc.) or restrictive agreement (requiring that certain quays be kept public).

(a) Forms of privatization

132. There are many different forms of privatization and the choice must be made according to the port's political, economic, social and financial environment and having regard to the port's aims. The following are some of the possibilities:

- Offer for sale of State shares

133. The offer for sale of State-owned shares in a (public) port enterprise may involve the sale of all or only a part of the shares. In the latter case, the Government decides whether or not it wishes to retain a majority holding. The offer may be made to the public or be limited to selected private groups. It may be limited to national bidders or be open to foreigners, an arrangement which may present problems.

- Sale of assets

134. The State may decide to sell assets which it holds in the port. A system of this kind seems likely to be adopted in the United Kingdom. There is apparently also a proposal to transform a European city port into a company whose capital will be both public (municipal) and private, the private shareholding being a minority one. 3/ In such a case it is necessary to ensure that the buyer (in particular a foreign buyer) will not be able to modify for his benefit the basic rules governing use of the port. For this reason, some countries require that the majority of the shares in the port remain in the country's public sector.

- Concession of port installations

135. Without relinquishing assets (land, installations, etc.) which it owns, the State may grant them on a concession basis to the private sector, subject to certain conditions regarding remuneration, use and liability. This is a frequent practice in the United States of America and in some other countries. Examples of concession contracts will be given in the World Bank study entitled "Should public ports be privatized?" (by Mr. Zvi Raanan).

- The privatization of port extensions only

136. Without prejudicing continued public ownership and operation of existing port facilities, the State may allow the private sector to participate in certain new operations. This has happened in the case of container terminals.

- Management contracts

137. Privatization of port operation has been carried out successfully in several container terminals. Without modifying the public ownership of the terminal, the State entrusts its management to a private enterprise against payment of a flat fee or an amount that is proportional to the terminal's traffic. The port authority of Jamaica, for example, has entrusted the management of the Kingston container terminal to Kingston Terminal Operators Ltd.

- Staff participation

138. The State may transfer part of its shares to its employees in order to stabilize and motivate them, granting them for this purpose certain financial facilities.

- Restructuring of the port authority

139. In the case of very large port authorities or port boards, such as are found in some countries, their efficiency can usefully be improved through a decentralized form of organization, with the establishment of a main company and subsidiaries, the State retaining the main company and financial control over the subsidiaries.

140. In the study entitled "Should public ports be privatized?" op. cit, a recommendation is made that, except in the case of private specialized ports, such as ore and other bulk terminals, the ownership of the fixed assets, and of the land and basic infrastructure in particular, should remain in the public sector (national or local government ownership) and that the port operators should be granted leases and/or concessions, either of a long-term nature where the lessee carries out major investment in a terminal, or short-term if the volume of traffic seems to vary with economic conditions. The author argues that short-term concessions whose renewal can be negotiated create less stable situations and are therefore a way of avoiding the potential excesses of monopolies.

141. Finally, it is worth mentioning the alternative to privatization adopted in certain countries for their public ports, which are managed like industrial or commercial establishments. Management has virtually total freedom in this model. There is a requirement to be financially self-sufficient (with some exceptions in the case of certain major structural works). An obligation to be financially profitable is sometimes exacted also (e.g. a specific rate of financial return on capital). This is an interesting method which has been adopted by certain industrialized and developing countries.

(7) Port community structures

142. As has already been shown, for such a complex entity as a port to function well, all the parties concerned - the port authority, the operators and even the users - must work together to achieve the best possible conditions for the passage of traffic through the port and must recognize that it is in their continuing interest to achieve that result, whereas the securing of a temporary individual advantage may gravely compromise the future of the community and therefore that of each of its members. Thus it is necessary to ensure that each member of the community is able to assert its own interest and that it is sufficiently well informed of the situation to appreciate that securing a temporary advantage may, in the long term, be prejudicial to him. The port authority, for its part, cannot validly exercise in the proper manner its prerogatives, as the governmental authority and protector of the public interest, unless it is fully informed regarding what each of its members can do, the extent of their capability and what effect its decisions will have on their activity, and thus, ultimately, how its decisions will affect the port itself.

143. Since it is clear that the deliberative organ (the governing council) of a port authority cannot function effectively if it is too large, its membership cannot include representatives of all the operators and users concerned, nor of all the local political authorities and economic bodies with an interest in the port's activities. Other formulas must therefore be found for the organization of the port community. Standing or ad hoc committees may be set up to provide views or advice concerning action proposed by the port authority before the action is taken. The composition of such committees will vary according to their competence. Thus:

- A maritime committee can provide the means of obtaining the views of seafarers and technical experts concerning facilities affecting the navigation and handling of vessels;

- A technical committee composed of representatives of port operators and users can give their views on plans for infrastructure and equipment and the way in which they will make use of transshipment and storage facilities or the means for the forwarding of traffic by land;

- An economic and commercial committee can be consulted on methods of port operation, including tariff matters, rules and practices relating to State property, etc.;

- A committee on facilitation of trade and simplification of administrative and customs procedures, composed of representatives of the customs authorities, the central bank, the port authority, carriers, shippers and port operators.

In addition, temporary working groups of experts can usefully be set up to examine particular problems and thus enable the port authority's deliberative body to take informed decisions.

144. The creation of such committees and working groups will generally be decided by the port authority. Either on that authority's initiative, or on that of the other members of the port community, it may be worth establishing a specific standing body of the port community in which all the parties having an interest in the operation of the port are represented (not only the operators and users, but also local communities, local economic bodies, and representatives of the port workers). Such a body will constitute a suitable framework for systematic and continuous consultation on all matters related to the port's functioning and its future, as well as the port's impact on its natural and human environment. This body can also play an active role in bringing business to the port, both domestically and in all countries where there are interests that might generate or develop traffic that will increase the port's activity. Thus, by providing a channel for all members of the port community to express their views and obtain information on all matters relating to the port, such an associative structure can strengthen the solidarity which must exist among these members and between them and the port authority. It can furnish effective help in solving the port area's everyday problems and in preparing for its future.

145. The port community must rely on three main pillars: the port authority, the port users and the port workers. The port authority represents the Government. It ensures that the public interest is protected and that the port develops in order to achieve its purposes. The port users are represented by one or more trade or professional associations, which may themselves form part of other professional associations or bodies embracing representatives of the various private or public sector enterprises or organizations working in the port: cargo handlers, shipowners, shipping agents, forwarding agents, land carriers, insurance companies, banks, etc. A strong (but not dominating) port authority and an equally strong users' association are necessary if the port community is to flourish. The port community will be successful only if both of these forces are present and complement one another in promoting the port and its development. This is often a difficult task calling for considerable altruism and motivation on the

part of the officials concerned. If these two forces are often in conflict, because of the inability or unwillingness of their representatives to reach agreement, it is the port as a whole that suffers.

146. While it is necessary to have a port authority and a federation of port users that are strong, well-organized and complementary, that alone is not enough. The workers of all the various port enterprises, both public and private, including the longshoremen, must, through their trade unions, lend their support to the establishment and development of the port community. They often have the capacity, through action in support of their demands, to prevent the port from functioning and can thus nullify all efforts made to promote the port. By doing so, however, they jeopardize their employment and their long-term interests. It is therefore essential for them to be associated with the task of strengthening the port community and developing the port. Measures must be taken to enable them to secure a fair share of the fruits of their labours.

A PORT COMMUNITY CURRENTLY UNDER DEVELOPMENT

The establishment of "Rouen Port développement"

A body entitled "Rouen Port développement" has been set up in the port of Rouen. Founded by the Port Autonome de Rouen, the Rouen Chamber of Commerce and Industry and the Union of Users of the Port of Rouen, this entity has been placed under the direction of Mr. Daniel Thomas, who has also been appointed manager of the future port.

"Rouen Port développement" will carry out, on behalf of the three bodies, tasks relating to the future of the port area and will combine their efforts in promoting and speaking for the port community.

Source: Lloyds List, 1 March 1991.

## Chapter II

## PORT MANAGEMENT

147. Management consists of decision-making. Where management is mentioned, it refers to the existence of an enterprise or organization headed by a manager (or managers) who takes decisions on behalf of and "manages" the body concerned. This chapter is therefore addressed to managers, in this instance the managers of port authorities or port operators.

### A. Some general principles of management:

### The theory of total quality-control management

148. It is reasonable to assume that general principles of management apply equally to ports. In the study of the theory of management there are several schools of thought. "Total quality control management" (TQCM) is a theory aimed at improving quality of services, lowering costs and eliminating waste. This theory has already been successfully applied in many areas and it seems well suited to the requirements of the port sector. This modern management method comprises five aspects, as discussed below.

#### (1) The system approach

149. The problems of quality are dealt with from the standpoint of the quality of a system. The operations carried out in ports are today so complex and involve such a level of technology that the best results and the best performances are achieved by defining specific working methods and procedures. The main procedures of the operational systems (e.g. goods handling, storage, etc.) are thus defined and must then be scrupulously applied. Failure or deficiency of any equipment or of any worker and any problem encountered in the course of the operations must be perceived in terms of the effect it will have on the system involved. It is imperative that all the parties involved in the operation of a system apply strictly the instructions they have received and that they play correctly the role in the system which they have been assigned. This involves a radical change from the past when port workers and gang foremen could, and even had to, improvise and adapt their working methods to the requirements of the port traffic. This system approach also means that there must be coordination and coherence among the various systems, all of which ultimately contribute to the proper functioning of the transport chain. Thus the cargo handling system must be harmonized and coordinated with the storage system, while the overall data collection and exchange system cannot function unless all play their part. This coherence and coordination will be all the better ensured for the port as a whole if there is a well-organized, structured port community.

#### (2) Emphasis on preventive measures

150. Supervision and checking are carried out not only at the end of the process of production of port services, but throughout the entire production phase. The quality of the end product must be ensured by eliminating the

causes of any deficiencies. In practice, this means that there must be information feedback, supplemented by a system of examination and diagnosis for identifying and rectifying the causes of problems.

(3) "The customer is king"

151. All the decisions taken must be taken in order to satisfy the port customer, who is at the end of the port services production process. In a port, it is the port users (goods or passengers) who are "the real customers". Their demands must therefore be the principal concern of those in charge of the various phases of production of port services. The same idea must apply within the organization: in the port services production process, the last phase is always the customer of the preceding phase, which must therefore furnish products or services that will fully satisfy its client. In ports, as in other economic sectors, the sales and marketing service is always the last stage in the port services production phase, which has its origin in the very planning of the port works. It is the sales department that makes the first contacts with the customers and offers them the port services. From the time when the port works are designed and throughout their use, the port and its management must have as their aim to satisfy the port sales and marketing department's requirements. Modern port management has three important aspects: sales considerations have priority; there is rapid transfer of information from customers; there is a rapid and effective response by the port in order to satisfy the customer.

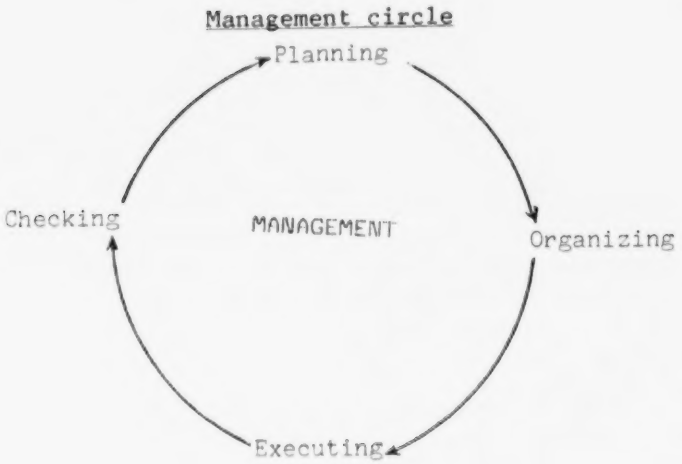
(4) The principle of integration

152. All the staff of the enterprise must participate fully in its management. This permits integrated management of all phases of the production process. Management of the enterprise is no longer the prerogative of a few top managers; it is the responsibility of the entire personnel, from the general manager down to the workers; each one must have his own objectives within his particular field of competence. The staff thus identifies itself with the enterprise and helps to ensure that it is soundly managed. This principle, which is simply the principle of staff motivation, is vital for good port management. Genuine participation always means giving responsibility, but this alone does not suffice and must be accompanied by the delegation of certain powers. The responsibility and the powers - of each port employee and of each port department - must be clearly defined in the objectives assigned to them. Management by objectives enables the port to be directed in such a way as to enable it to come as close as possible to attainment of its assigned purposes.

(5) The modern "management circles" method

153. This method proceeds by several successive stages - planning, organizing, executing, checking, altering, planning, etc. - as shown in figure 2.

Figure 2




154. These phases are repeated systematically, with greater and greater perfection being achieved and apply at different levels. There are thus many circles to be defined in the same organization: the management circle of the enterprise, the management circle of the various departments and the management circle of the work gangs. All circles are interdependent: the quality of one depends on the quality of the others, which cannot exist by themselves. In following this method the port can develop harmoniously. It is particularly useful for certain developing countries which are still dependent on foreign aid. The port must have a capacity for self-improvement, self-adjustment and self-development, for such a capacity is of primary strategic value.

MANAGEMENT CIRCLES

The port authority of Singapore (PSA) has introduced what are known as "quality control circles". Some 320 circles have been defined which involve 2,500 persons, or 34 per cent of the port authority's personnel. The port authority estimates that this method has resulted in savings of $122 million and 25,000 man/hours of work in 1990.

Source: PSA Annual Report 1990, p. 37.

## B. Special features of port management

155. The ports of most countries are public in character in that all or part of the port facilities belong to a public organization (the State or a local or regional authority) which operates them or entrusts their operation to third parties under various arrangements. A specific feature of port management therefore lies in the relationship which exists between the State (or the local or regional authority) and the port. As was mentioned earlier,

the role played by the State vis-à-vis its ports varies greatly from country to country. In many cases, the State exercises control over its ports through its representatives in the port authority. Thus there is a direct relationship between the port activities and the supervisory authority. This relationship is apparent in different areas: construction, financing and use of port works and equipment, tariffs, employment, security, etc.

156. Another important feature of port management derives from the existence and role of the port area. For many ports, the port area is of relatively limited size. Within this area the many participants in the port's functioning work: port authority employees, customs officials, cargo handlers, forwarding agents, officers of banks and insurance companies, shipping agents, employees of banks and insurance companies, road and rail carriers, etc. The coordination of all their activities, differing in character and scope, is often a difficult task.

157. A port is a system. The purpose of its activities is the production of services. These services are often carried out by various port enterprises. Increasingly port customers or users consider, quite rightly, that the port, or rather the port system, must furnish them a full, integrated service, namely the optimum transit of goods through the port, and not a number of individual services which they themselves have to coordinate. Port management is in fact the management of a services system.

158. Port systems are comparable with the other types of economic system, with some slight differences. In many countries, the port authority is one of the components of the system. It is organized as an economic entity (see chapter I) although it maybe called an "authority". It must therefore be regarded as similar to other economic enterprises (or components) of the system, but as having broader objectives superposed on the normal objectives of any private enterprise, as well as particular constraints (e.g. certain guidelines and controls). These public interest objectives and constraints are imposed on it by the governmental authority which it represents within the port system. They are very limited or even non-existent in the "microeconomic" conception of the port system. However, they can be quite burdensome and binding, as has been seen in some countries. The port authority must nevertheless be able to function with the same dynamism and efficiency as all the other economic enterprises of the port system, otherwise the whole system will be defective, which will be prejudicial to the national interest in the present context of increasing competition and of rapidly changing demands on the part of the users (shippers and shipowners). The present trend towards decentralization and sometimes privatization should enable the port authority to assume a better position vis-à-vis the governmental authority and to act as a driving force in improving the port system.

## C. The objectives of port management

159. Here it is necessary to explain the difference between the purposes of ports (a question already dealt with) and the objectives of port management. The purposes of ports imply a broader concept. The objectives of port management are more specific. They are often quantitative and centred on the

production of port services by the port authority or the operators. Port management objectives are dependent on the port's purpose. The port system's purpose or aim is the direction the port must take; it is where the State wishes the port to go. The management objectives are the markers along the path leading to that goal.

160. The objectives of port management can be divided into two main groups: the overall objectives and the sub-objectives. The overall objectives apply to the port community and, frequently, to the port authority, which is responsible for taking decisions in the public interest and for the port's development. The sub-objectives apply to the port's various operators, services and enterprises.

(1) The overall objectives

161. If the macroeconomic approach is the one adopted, the port may benefit from some governmental assistance in the form of financing of infrastructure, preferential tax treatment, etc. However, the State frequently also imposes certain obligations to be fulfilled by the port or certain constraints which it must observe. For example, it may strictly control the port's charges or the quality of the port's services. But similar controls may also exist in the case of microeconomic systems. Where the microeconomic approach is adopted, there is obviously a close link between the overall management objective and the purpose or aim of the port. Frequently, in defining the scope of the overall objective, account is taken of the port's role in the economic development of the country or the region concerned. Other factors considered are the need to coordinate the activities of all the economic actors in the port area. It is desirable, in defining the overall objectives, to take a long-term view. This constitutes one of the basic features of the overall objectives. In all cases, however, the overall objectives must be specific, practical and generally understandable: for example, establishment within 10 years of an industrial zone in one part of the port; provision of new facilities to increase container-handling capacity in another part; development of several hectares for a storage and distribution zone in another area; etc.

162. Under the microeconomic approach, the port enjoys greater freedom to set its overall management objectives. The governmental authorities do not intervene. The port authorities (often the board of governors) determine the operating and development objectives solely in terms of their port's interests. This does not of course mean that the port no longer has a duty to fulfil its social obligations as an economic and commercial entity. It means, however, that, vis-à-vis the Government, the port is in the same situation as other enterprises of the business sector. It receives no general or special subsidies for its development and, in its management objectives, it has no additional obligations.

163. In such a case, or in a macroeconomic system where the relation between the State and the port area is flexible, while the port is not required to give priority to its development, the port community and the port authority must attach the greatest importance to the adoption of an overall objective centred on development of the port, in terms of both its works and equipment

and the range and quality of the services it offers. It takes almost a decade for major port projects to proceed through the various phases of preparation, maturation and execution; hence the need for advance planning. There is particularly keen competition among operators to occupy land in the port area because the traffic which will develop in the future will be very demanding in terms of space. For this reason it is important to have a master development plan. The improvement and extension of certain services, including "support" services such as the exchange and processing of information, must also be given high priority. In the present competitive context, any port which does not improve its performance necessarily declines.

164. All ports - whether large or small and whether located in developed or developing countries - which have achieved impressive results are ports which, at an early stage, set medium-term and long-term (20-year) objectives for their physical infrastructure and plant and, increasingly, for the development of their human resources.

(2) The sub-objectives

165. Unlike the overall objectives, which are necessarily expressed with some degree of uncertainty (e.g. best, worst and intermediate options) and applied to major operations, the sub-objectives of port management must be specific and accurate and applied to clearly defined units or persons. They must:

- Apply at all levels (from general manager to worker) and to each management unit;

- Be interdependent;

- Apply for a fixed period (e.g. one year).

166. In defining the sub-objectives of port management, attention must be paid to certain rules:

(a) The sub-objectives must be limited in number. Each unit of each organization (port authority, operator, etc.) must have its own objectives; these must be fewer in number the lower one descends in the hierarchy. If there are too many objectives, there are in practice no longer any objectives. It is necessary always to concentrate on the vital points instead of looking in all directions and finally being too vague. There should normally be three or four objectives for each production unit.

(b) The sub-objectives must be clearly defined. The definition must be short, simple and easy to understand. The key activity of the port, of the enterprise, of the department or of the gang or team must always be the basic element of the objective. This need for clarity also implies a need to set a time-limit for achieving the objective that has been defined. Here it is necessary to make a distinction between a business slogan and a management objective. A slogan can be issued couched in abstract terms and does not set any time-limit for implementation, whereas a management objective must always incorporate a time-limit. The period fixed for attainment of the objective may be long (up to 5 or 10 years or even more) or short (a year or 6 months).

167. Objectives must be specific and quantitative in order to facilitate carrying out the necessary measures and so that results may be checked and evaluated. For management purposes, an objective such as "improved service quality" or "secure more container traffic" has little meaning. When production norms are used as management objectives, attention must be paid to two aspects. A single production norm may be unilateral, especially in the short term. It is then preferable for it to be accompanied by other norms relating to quality, cost or production method. For example, "reduce ship waiting time (or equipment breakdown rate) by 5 per cent this year" or "reduce the unit cost of container handling by 5 per cent this year" would be well-formulated objectives. Production norms, such as the quantity of goods entering or leaving the port, the number of containers handled or the handling cost, often depend on factors over which the ports have no control. Thus exchange rate movements are a factor that directly affects the cost norm and over which the port has no control. Where port management objectives are based on production norms, absolute figures such as tons of cargo and number of ships arriving and departing may be used, but only with some care. Comparative or relative figures are preferable, as for example: "handle 10 per cent more containers this year than last year" or "receive this year 20 per cent of the containers entering or leaving the country" or "become this year one of the world's top 50 container ports". It is also possible to set objectives related to the competition, such as: "handle more coal traffic this year than the neighbouring port". Such objectives are competition objectives. When there is not sufficient domestic competition, e.g. in the case of a country with a single port, the port must "place itself" in the international context and thus set itself objectives in relation to the ports of other countries.

168. A basic rule to be observed in setting a port's management objectives is to secure the understanding, agreement and support of all the persons concerned with achievement of the objective. Many examples could be cited of failure to achieve excellent objectives simply because this essential requirement was not met. The establishment of management objectives calls for teamwork. A procedure must first of all be laid down that will permit all those concerned to participate. Those in charge must explain in detail to the persons involved the requirements and the desirable environment for attainment of the objectives, the importance of the objectives, the connection between the objectives and the development prospects of the enterprise and of its employees, the difficulties that may be encountered and, of course, the efforts that will be called for. It is possible that attainment of the management objectives will be prejudicial to certain persons or groups of persons or, on the contrary, that it may benefit them. It may also help to modify existing procedures and working habits in certain parts of the organization. In such cases the explanation and consultation phase before the adoption of the objective is particularly important. It is only when there is general agreement upon and general support for the objectives to be achieved that the latter can be applied. In UNCTAD's study of Morocco (UNCTAD/SHIP/627) it was found that at the level of each production unit (e.g. a specialized terminal or a number of general cargo berths) quantified management objectives had been defined and adopted by applying the principles described above. There can be no modern management without objectives.

## D. Decision-making in port management

169. In port management, there are three categories of decisions: routine decisions; innovative decisions and strategic (or managerial) decisions.

### (1) The three categories of decisions

#### (a) Routine decisions

170. These may be taken at any time during the everyday management of the port to ensure, for example, performance of the external functions of the organization: cargo handling, pilotage, maintenance, etc., and also the internal functions (economic, financial, etc.). Thanks to the increasing efficiency of the port equipment used, these decisions are generally taken on a systematic basis and, increasingly, they are programmed. These routine decisions may also be known as certainty decisions, because their effects are generally known with a high degree of probability even before the decision is actually taken. A stevedore must grapple a sling-load; a crane operator must load or unload trailers. There are no possible alternative actions. Increasingly, decisions are programmed under a system which must be strictly followed without any innovation, (an example of this is the system of operating container terminals). Any person with initiative can propose changes in or improvements to the system, but he must not improvise changes in the execution of the various phases of the system. It is thought that a considerable number of these human decisions will one day be replaced by high technology (computers, robots, etc.).

#### (b) Innovative decisions

171. These are more specific in nature. They are not everyday decisions. They are special in that their consequences are never known in advance but will depend on the reasoning capacity of the decision maker. They call for an analytical capability and considerable experience. In port management these decisions are taken mainly in the commercial and marketing departments, in certain technical departments, in finance departments, in training departments and, of course, in departments concerned with research and development.

172. Two main aspects of innovative decision-making are important for port management. The first is that these decisions are highly personalized. The decision-making is often stimulating and serves increasingly to motivate the persons concerned (routine decisions are only rarely of this nature). Secondly, the quality of the innovative decisions depends not only on the capability and experience of the decision maker, but also on the freedom of action allowed by the next higher level of authority. In other words, the power of innovative decision-making may either be reserved for the top of the hierarchy or, on the contrary, delegated to the lower echelons (unlike in the case of routine decision-making). The level at which innovative decision-making should take place is currently the subject of much discussion in many countries, and particularly in some developing countries, because this power is too frequently insufficiently delegated to the appropriate levels. It will thus be seen that many port management problems result from the absence or the poor quality of innovative decisions. The behaviour of the

persons who take a decision and carry it out is vital. Some are active and responsible, while others are passive and indifferent. Everything depends on their motivation.

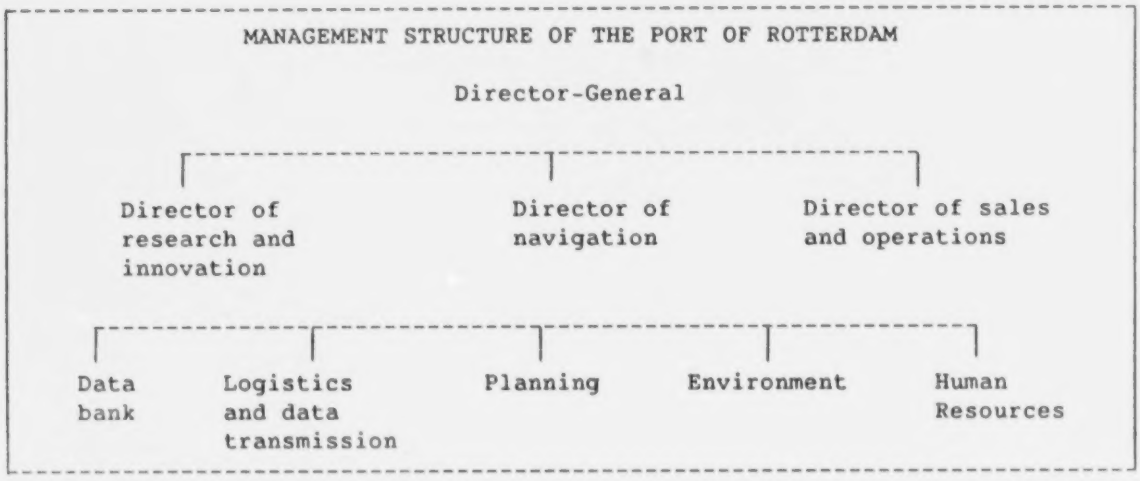
(c) "Strategic" or "managerial" decisions

173. Such decisions are obviously taken by the management of the enterprise or of the port. These decisions are concerned with the long term, the port's policy, its development, reorganization, major investment, the coordination of State/port or local authority/port relations, etc. Although this type of decision-making is highly personalized and requires much experience, it is essential that it be based on very thorough quantitative analyses. Decision makers must have a very broad international view of economic developments, of trade, etc., and of the related political, economic, commercial, social, technical and technological problems.

(2) The levels of decision-making

174. These three categories of decision-making are to be found in all port organizations, whatever their structure, but there is much more routine decision-making at the lower levels of the hierarchy. The levels at which innovative decisions are taken vary from port to port. Very large ports, such as Rotterdam (see fig. 3), encourage these decisions to such an extent that one of the three main divisions of the port administration is called the "innovation division" and is concerned with activities calling for such decisions (planning, data processing, development of human resources, etc.).

Figure 3




175. All decision-making generally takes place because of the existence of a problem which has to be resolved or avoided. Some people believe that decision-making consists in providing solutions to problems. In fact, however, the decisive stage is study of the causes of the problems. When port deficiencies or inadequacies are found that cannot be settled after a few attempts, it must not be concluded that the right solution has not been found,

but rather that the true causes of the problem have not been identified. Centring decision-making on the solutions instead of focusing on the causes of the problems may lead to quite different results. Who, in a port, can take the decisions? Those in charge. Who best knows the causes? Those working on-site, where the problems arise. No decision should ever be taken, therefore, without involving these people in the process.

176. This point is highly important if effective port decisions are to be taken. In the course of an UNCTAD study of certain ports in developing countries of Africa it was found that investigating the causes of problems was not being carried out with the necessary care, whereas much effort was devoted to rapidly finding solutions. Decisions were taken on the basis of proposals that were made. An example may be given: there is a drop in the productivity of cargo handling; the question to be answered is "what are the causes?". If this line of reasoning is not followed, the decision maker will, by a seemingly logical act of judgement, rapidly reach the obvious solution: new equipment must be bought. The money will then be spent, but the problem will not be solved if the drop in production is not a technical or investment problem but rather an organizational one. The causes of the problem were not correctly analysed!

177. The difficulties connected with the quality of port decision-making in developing countries are often owing to the excessive distance between the place where the problem arises and the place where the solution is worked out. It is a basic principle of management that the decision must be taken by the people who are best acquainted with all the causes of the problem and the consequences of the decision.

(3) Constraints on decision-making

178. The number and weight of the constraints imposed on port managers directly affect the rapidity, quality and effectiveness of the decisions taken. Although those in charge of port authorities or port enterprises are always subject to some form of constraints, experience shows that the best results are always achieved in those ports where the constraints inhibit management decision-making the least.

179. Of the various possible constraints, two should be mentioned. These are constraints related to staff matters (recruitment, promotion, transfers, dismissals) and constraints affecting economic and financial decisions (purchasing, investment, construction, tariffs, etc.). In too many cases the State intervenes frequently in the port's economic and financial management, which ultimately results in delays and distortions in the decisions. The State, or sometimes the employees' trade unions, prevent or delay certain transfers of personnel or termination of employment which those in charge of the port consider necessary. Some Governments adopt regulations prohibiting their ports from undertaking activities other than the handling and storage of goods. Such a constraint may have serious consequences today when integral transport is expanding and when ports must play an active role as service-providing centres in the transport chain. If a State has decided to decentralize or delegate certain powers in order to ensure better port management, it must realize that genuine decentralization and delegation of responsibility cannot apply without freedom of decision-making. The State

(and the trade unions in many cases) must realize that the interests of the enterprise and those of the port employees converge in the long term. This convergence must be encouraged so that the port, its enterprises and their employees may prosper. The port personnel must be able to function and express themselves in a favourable climate based on motivation, the search for efficiency, long-term development and an equitable sharing of the benefits to be thus obtained. If there are any constraints emanating from the governmental authorities, they must be imposed in a far-seeing manner so that they do not slow down daily operations. It is preferable for them to be applied a posteriori and not a priori (for example, in some ports equipment purchase expenses cannot be obligated without the approval of the ministry concerned. When such measures are applied to the purchase of small items of equipment required for port operations, they lead to unnecessary halts in port operations and are therefore prejudicial to the economy of the country concerned). The ideal situation is where those in charge accept and understand the need for these constraints and apply them themselves, voluntarily, and not under threat.

(4) The selection of port decision makers

180. In a port community or a port enterprise, as in any other organization, the quality of those in charge is of particular importance. For a port to be successful, the person in charge of it must have a strong personality. He must of course be experienced and competent, but that is not in itself sufficient, for one man alone cannot do everything. The essential quality that this person must possess is an ability to organize, innovate, take risks and mobilize and encourage a team in which all the members of the organization are inspired to act in such a way as to ensure performance of the organization's tasks. He must be able to create a working atmosphere which will give the staff the desire to toil with him, trusting him fully and accepting the orientation which he gives to the enterprise. Such leaders may have very different individual personalities. Whatever the differences, however, they must have certain common features. A port manager must always be fair in his decisions and judgement and be free of prejudice with regard to those under him. He must be honest and always tell the truth, although it is often necessary to be tactful. He must also recognize and correct any mistakes he has made and must be himself ready to observe the same rules he requires others to observe. He must have total confidence in his enterprise and always be optimistic regarding the future, while at the same time be realistic and clear-sighted. He must be modest and must be able to remain in the background whenever the interest of the port community and of the port itself so requires. He must have foresight and take a broad view of the future. He must involve himself personally in promoting his port and must not be reluctant to travel in order to win new traffic for it. He must be open-minded when difficulties arise but firm in taking decisions. He should set an example and keep any promises he makes to his staff and his customers. He must be firm in eliminating from his enterprise and from the port any bad practices, including corruption. Lastly, he must be humane, appreciate the problems of his staff and be ready to help them, but he must also be lucid and firm if work output is deteriorating and leading the port into decline. He must then be able to negotiate with patience and diplomacy, but also to be persevering. This last task is one of the most difficult because the social climate within ports can deteriorate rapidly.

181. All these many qualities are not readily found in a single person. Nevertheless, experience has shown that such people exist and in all parts of the world. The ports sector is, for many reasons, an interesting and even fascinating field, perhaps more so now than ever before because the stakes are higher and the implications more significant. There are challenges in this work that are sufficiently motivating to attract leaders of high quality.

182. Considerable discernment and perseverance must therefore be shown by governmental or other authorities or persons who have to choose port directors, before they make their choice. A great port director or president of a port community will be capable of finding the best solutions, whatever the difficulties or inadequacies he encounters, and he will be able to prepare the port's development for the future. These observations are neither unfounded nor purely theoretical. They are based on situations which have been found to exist even in developing countries, where some very able port leaders have shown that a port can become a model and a driving force for the development of the country. It may be claimed that these qualities apply also to the leader of any enterprise, but the point merits emphasis because, in this regard, many ports have not always been considered to be enterprises. Rules or practices have become established which may restrict the choice of port directors. Recently, in countries with a long port tradition, certain restrictive practices appear to have been revised, so that it has been possible to choose the best candidate to guide the port's development in the manner that best serves the interests of the port community and of the country concerned.

PORT MANAGERS IN DEVELOPING COUNTRIES

Many UNCTAD studies have shown that capable port managers are increasingly to be found in the developing countries. Under a UNDP-financed project entitled "International Development and Human Resources Management in the Ports of Sub-Saharan Africa" (RAF/89/028) case studies were carried out in four different countries (Côte d'Ivoire, Ethiopia, Kenya and Senegal). Of the 33 factors identified as having a (negative or positive) impact on the functioning of ports, the only positive factor common to all four ports was the quality of the port management (the most frequent negative factors were excessive governmental interference, bureaucracy and overstaffing).

The UNCTAD study carried out in Morocco ("Port organization and administration: a noteworthy experiment in Morocco") pointed out that the cause of the improvements found in ports was the quality of the management (and the support provided by the ministry concerned).

In the course of a technical assistance programme carried out in Central America more than 10 years ago, it was noted that the port of Puerto Cortés (Honduras) had become one of the most efficient ports of the region and that this was due to the high motivation shown by the port director, who had decided to set up office with his senior personnel close to the port itself.

## Chapter III

## THE TOOLS OF PORT MANAGEMENT

183. In the preceding chapters the port environment and the basic factors in port organization and management were described and analysed. The responsible officials (or decision makers) of ports, whether working through a port authority or a port operator, have at their disposal many "tools" for managing their organization. The term "tool" may appear odd, as it is generally used in reference to manual occupations. It is used here intentionally because there is often similarity between the work of an artisan and that of a modern manager of an enterprise or organization, in that both adhere strictly to rules and practise real professionalism. Likewise the work calls for the use of instruments, methods and techniques - in other words tools - that are suited to the specific functions which managers have to perform and with which they must be entirely familiar. These tools are interdependent and are effective only if used systematically. Only too often, those in charge of ports lack training in port management, learn on the job and sometimes make mistakes. In some cases they spend only a short time in the port. It is therefore felt that they should derive benefit from a full and detailed description of management tools, which, once they have learned their use, will enable them to carry out the tasks and achieve the objectives set for their organization.

184. There can be said to be six major groups of management tools, differing according to their characteristics:

Administrative tools;

Economic tools;

Financial tools;

Commercial tools;

Technological and operational tools;

Human resources development.

Some of these tools have already been described elsewhere (including publications of UNCTAD). They will simply be mentioned in passing, for a detailed description of them would make the present study too long.

### A. Administrative tools

185. The following is a description of the two most important administrative tools: organization of the enterprise; and, rules and regulations.

186. The structure or form of organization of the port authority or port operator will naturally depend on that entity's field of activity. It constitutes a powerful management tool. The current trend is towards having a small number of divisions or departments so that the organization will be

managed by a small team of officials who work closely together. Another interesting trend is towards the establishment, within these major divisions or departments, of production units or centres that are given considerable powers and responsibilities, as well as output incentives of various kinds, including profit-sharing schemes. In this connection, the reader is referred to the UNCTAD study on Morocco "Port organization and administration: a noteworthy experiment in Morocco" (UNCTAD/SHIP/627) op. cit. An organizational chart and post descriptions are used to illustrate management decision-making in the field of ports. These are of undeniable value. However, they should not lead to the adoption of a rigid form of port enterprise or authority, as this would not meet the port traffic's requirement for adaptability and flexibility. Very eminent port directors take the view that the organizational structure must be adapted to the capability of the personnel, and particularly of the key personnel. It has been found that changes are sometimes introduced solely for the purpose of making the best possible use of the organization's human skills and capabilities.

187. There is obviously a direct link between the organization's structure and the functions which the organization has to perform, including its priority functions. A few decades ago the principal functions of a port authority were often centred on the construction of port facilities. The trend today seems to be towards greater emphasis on commercial and development functions. This shift in emphasis should be reflected in the organizational chart. In some ports there has been no change, however, and commercial and development functions have not been given the status in the organizational chart which they should have. The same comment applies, in certain developing countries, to the "equipment maintenance" function, which is increasingly vital for efficient functioning of the port's operational systems and should be given a higher position in the hierarchy of divisions or sections of the port authority or port operator.

188. Rules and regulations, including those of the port authority (e.g. police by-laws and operating regulations), are used to inform port users and customers of measures taken to ensure that the organization functions efficiently. They are generally drawn up by the port authority and signed by the port director or the government department concerned. Any form of rules implies the existence of a text, which must necessarily be kept up to date so as to meet the requirements of the port's traffic. In some ports the proliferation of texts is such that they are no longer kept up to date and this may give rise to disputes. World trade and hence the role of ports are changing so rapidly that it is impossible to foresee and regulate everything by means of texts. Laws and regulations must be reduced in number and they should deal only with essential matters such as the safety of persons and goods, port operating rules and the control and supervision of harbour, water and land areas.

189. There is one major difficulty here, particularly in the developing countries. It is that while there are maritime lawyers and lawyers who specialize in land transport, there are often no lawyers specializing in the field of ports. Port law is a very specific field. It is essentially domestic (whereas maritime law is essentially international). The field covered by port law is also very extensive. It embraces legislation and

enactments concerning the organization of the national port system, port operation regulations and police by-laws, pre-litigation procedures, litigation, insurance, management of State property, etc. While the volume of these laws and regulations must not be allowed to expand, as was just mentioned, it is nevertheless necessary to avoid erring in the opposite direction. Sound regulations are the essential basis for the effective functioning of a port and the existence of experienced port legal departments will enable all port enterprises to avoid many disputes, incidents and accidents and the costs arising therefrom (direct or indirect costs owing to halting of port operations, etc.). UNCTAD is currently preparing a study of this subject which will be entitled "The legal and regulatory aspects of port activities".

## B. Economic tools

190. The economic tools are all based on a system of collection and processing of port information and statistics. This system constitutes the basic tool for port economic work. The reader may consult, in this connection, UNCTAD's "Manual on a uniform system of port statistics and performance indicators" (UNCTAD/SHIP/185/Rev.2).

191. In many developing countries, but also in major ports, the system for the collection and processing of information and statistics is not entirely satisfactory because it places most emphasis on technical or physical data (ship arrivals and departures, tonnage or volume expressed in units handled, etc.) while paying insufficient attention to economic data. To gain a true picture of the economic situation, it is also necessary to know the prices actually charged by the various participants in port activities. These may be different from the official tariffs where the latter are maxima to which discounts may be applied. Such economic data are expressed in terms of costs, time lost (waiting time), productivity, value or benefit, etc. They are necessary for defining and carrying out many management decisions.

192. In some cases the statistical system is so complex that it is no longer accurate and is therefore no longer reliable. Some ports have only limited resources and it is unwise to advise them to produce too many statistics or productivity indicators which even the major ports are unable to produce or do not need. Basic statistics relating to goods must take as much account of the container (or packing) as they do of the contents and must also have regard to the characteristics of the goods (specific weight, fragility and even intrinsic value) since the port's primary operation will be the handling of consignments in the best possible conditions. The economic statistics and indicators must place emphasis on certain aspects, such as team or gang productivity, the efficiency of berth and on-ship operations, of operations ashore (transit cycles) and of warehouses and storage areas. A systematic effort must be made to identify waiting periods, dead time and equipment breakdowns, which affect port operating processes, port costs and port reputations. In very modern ports, for the benefit of the port community as a whole, a data bank is set up in which are entered particulars from ships' bills of entry and manifests. Technical operations and administrative and customs formalities can be accelerated and improved in ports having such a data bank.

193. Using such data and statistics, the first economic management tool to be set up is the port operations table. This is a periodic compilation (daily, weekly, monthly, annual) of significant economic parameters for evaluating trends in the activities of the organization, department or unit concerned. In an operations department, the economic parameters will be the output and performance of work gangs (this will give a measure of their productivity), equipment idle time, ship waiting time, warehouse and storage areas occupancy rates, material and bodily accident rates, etc. Such a tabulation of data is useful, not only because it permits comparisons with other ports, but also because of the picture it gives of the trend of these indicators over time, within a port and between the various berths of a port, where comparable activities take place.

194. Another important economic tool, both for the port authority and for the port operators, is the setting of tariffs, or port pricing. This is a specially useful strategic instrument for any port's income, investment or operating policy. The practice, too frequently, is simply to adjust the tariffs periodically upwards, because this step is dictated by the constraints imposed by the competent authorities, because of ignorance or because this is the easiest course to adopt. In ports, as in any other commercial activity, sound management calls for tariffs to be aligned on costs, in accordance with the "true cost" principle. For the port authority and for every operator, this theory is valid for the enterprise as a whole, since the income generated by application of the tariffs (and from other sources) must obviously cover the costs. It must also provide reserves, perhaps the sums needed for development of the enterprise and, if possible, a return on the capital invested.

195. In the case of ports, as in the case of any other commercial activity exposed to competition, the prices charged are dictated by the market: they are therefore the prices which the customers are prepared to pay, having regard to the prices charged by the competition and the customer's ability to pay them (for an excessively high charge may cause the customer to abandon his activity or may prevent him engaging in it).

196. The port (or the operator) must therefore adapt its charges to the prevailing market. It must at least charge for each service it provides a price that will cover the corresponding variable costs, but it often has to increase its charges in order to finance some part of the fixed costs and overheads of the port or enterprise. Its accounts will be balanced when its overall income enables it to cover all its costs by making adjustments, as it were, between the various services provided and by charging more for those for which its customers can stand a higher price and by charging prices close to the variable costs for the other services.

197. Here it is necessary to draw the attention of port directors and managers to the fact that basing fixed charges or costs on variable unit costs will necessarily be arbitrary, whatever the method of apportionment adopted. It is obviously very convenient to have overall unit costs because, since the tariffs apply also to units (tonnage of goods, ship's tonnage), it is also easier to change over from one to the other. This is justified only for the variable costs. It is necessary to adopt another method for the other costs

and to determine what contribution the traffic can be asked to make to the fixed expenses, having regard to its capacity to pay the corresponding cost, or, to use the economic term, the elasticity of the demand.

198. Sound management, which means considering not only the overall cost, but also the elasticity of demand, therefore, calls for the manager to make every effort to reduce both unit and overall costs, since there are certain prices which cannot be increased. The study of this elasticity is a useful pricing tool as it permits determination of the substitution costs of the demand for port services.

199. When there is keen competition between ports and/or between different modes of transport, the substitution costs for the goods carried are the additional transport costs, the time required for the transport and the risks involved in using the port or in using the alternative mode of transport. The port tariffs must not be set above the substitution costs (additional costs plus tariffs of competitors) so as not to lose any traffic to the competitors. Where there is no competition, there is no other port or alternative mode of transport and the substitution costs are then the costs which the final users of the port will bear in using products other than those which would have passed through the port. Conversely, a reduction of the tariffs can generate new traffic for the port.

200. It is also possible to use the elasticity of demand principle to achieve better utilization of port facilities or equipment. Thus progressive and dissuasive tariffs may encourage the port users not to leave their ships (or their goods) too long in the port. Pricing also affects the supply of port services. If the tariffs are low, this may discourage investors and especially private investors. If the tariffs are too high, this may affect the demand and induce competing ports to provide increased services. Port sales and marketing divisions must play a major role, in cooperation with the economic and financial departments, in any modification of the tariff level or basis.

201. Utilization of the pricing tool calls for considerable mastery of the mechanisms involved. In many ports the weight of tradition is such that shipowners (or goods) have either benefited or been penalized, while in other cases virtually all the port income has been derived from the provision of particular services (e.g. warehousing). Juggling the tariff base and level so as to produce an incentive or a disincentive often means introducing major tariff changes, which may compromise the overall balance of income. In this connection the reader is referred to the UNCTAD study "Port pricing" (TD/B/C.4/110) and the fourth training course "Port pricing policy and strategy" (Improving Port Performance: 4).

202. The last economic tool to be examined is port planning. Planning the development of a port or of a port enterprise is preparing for the future. At present it is scarcely possible to make reliable forecasts of traffic trends for more than two or three years ahead. The time required to bring to fruition any major port project such as the construction of a new terminal or a new harbour area is very much longer. The planning process must attempt to reconcile the uncertainty of traffic trends with the requirement for accuracy in planning major investment. So-called "strategic planning" allows for this

uncertainty and aims to find an economic course which will reduce port development costs to the minimum. Strategic planning takes place when, in planning a multipurpose terminal and not knowing how the traffic will develop, provision is made for the use of dismountable transit sheds. If the container traffic increases substantially and requires considerable space, the sheds may then be moved. There is also strategic planning when quay foundations are made one or two metres deeper so that it will be possible, if the need arises, to increase the water depth merely by dredging, without the necessity for any underpinning work. In the two cases mentioned above, the project cost will be slightly higher but, in the long term, the overall port development cost will have been kept as low as possible.

203. Forecasts of traffic trends are unreliable, but it is sometimes possible to overcome this problem by securing long-term traffic contracts from certain major port users. This often means agreeing to make certain sacrifices (special tariffs, berthing priorities, assignment of port equipment, etc.), but, in exchange for this, some certainty is obtained with respect to a part of the traffic and it is thus possible to plan the port's development on a firm basis.

204. An effective way for a port authority to achieve further adaptation of the port facilities to the traffic demand is for it to obtain control of areas for the creation of berths for ships and for the main handling and storage facilities. The authority then makes these areas available to the operators on the basis of concessions or licences which must be of limited duration. The duration can be greater, however, if the operator has to undertake major investment on the sites obtained. In this way, if a certain traffic declines or vanishes, or if an operator ceases to function, the area involved can be made available to other traffic or to another operator, thus ensuring a satisfactory level of utilization of the common facilities such as port approach works and breakwaters. This procedure, which obviously implies a certain amount of dirigisme on the part of the port authority, does not however mean that it must intervene in the operational activity once it has authorized occupation of the publicly-owned land involved. The operator may even enjoy complete freedom to construct such works or install such facilities as it deems necessary and to set charges and establish conditions for their use - provided only that it observes the rules relating to public utilities (in particular, equality of treatment for all users), if the port authority considers that the operator's activity must have that character - which is often the case where there is not sufficient space to permit the siting of competing facilities. The planning must be carried out in a systematic fashion, so that no parameters that are of importance for development of the port system are forgotten.

205. This system must be integrated within other systems (downstream i.e. seawards, and upstream, i.e. landwards) and the necessary compatibility and harmonization must be ensured. Attention is drawn here to the importance of ensuring that the land access works (bridges, roads, etc.) and the corresponding systems (railways, etc.) are of appropriate scale and adapted to the port traffic's requirements. The specific constraints of any new traffic must be taken into account at the outset and not at the end of the planning process; they include ground load-bearing constraints imposed by the weight of cargoes and of heavy equipment, dimensions, lighting, security and

environmental impact. The environmental protection constraints are now being increasingly emphasized. In preparing development plans for several major United States ports, it has been necessary to deal with problems connected with protection of the environment. 4/

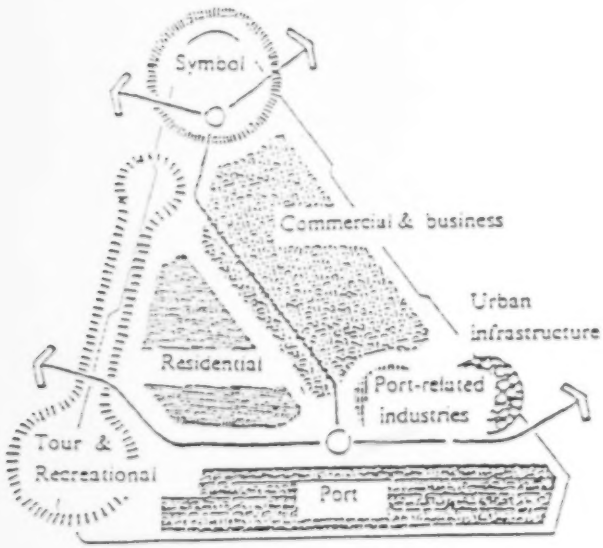
206. All the world's largest ports have medium-term and long-term development plans. Hong Kong, where the Government had adopted an essentially microeconomic approach, with substantial private sector participation, has drawn up a series of successive development plans extending to the year 2011. The seven existing terminals were built and are managed by private sector enterprises, but the Hong Kong authority has itself drawn up the long-term development plans.

207. At Pusan (Republic of Korea), a veritable strategic plan has been drawn up for the coordinated development of the port and the city, in order to meet the needs of the twenty-first century. This plan provides for the establishment of a "New Port City", in which all the functions of the port and of the city are anticipated, coordinated and harmonized, as can be seen in figure 4. Such an integrated design for the development of the port and the city is a necessity. The new port functions are developing within the city itself and it is therefore important to plan and organize the changes which will take place.

Figure 4

THE NEW PORT CITY OF PUSAN

Function distribution diagram




Reproduced from "Port-City Relations in Korea" by Ji-Soo JUN, a document submitted to the Seventeenth World Ports Conference of IAPH, Barcelona (Spain) 4 to 11 May 1991.

## C. Financial tools

208. These tools are of two kinds: general accounts and cost accounts or analytical accounts. The general accounts enable the responsible officials of a port authority (or of a port operator) to manage the organization's financial and monetary flows (earnings/costs, liquid assets available and claimable) and to draw up periodically balance sheets showing the organization's state of health. These accounts are compiled in accordance with the laws of the country concerned and the relevant international norms. In this connection reference is made to the study on Morocco "Port organization and administration: a noteworthy experiment in Morocco" (UNCTAD/SHIP/627) op. cit. in which a public ports organization has shown that the principles applied to ports in the private sector can be applied to those which are publicly owned. It too frequently happens that publicly-owned ports apply (or are compelled to apply) norms of such a nature that the figures appearing in the accounts are a long way from being the economic values and therefore cannot reflect economic and financial reality. This is often the case of the norms used for calculating the depreciation of port infrastructure and equipment. It is also sometimes found that, in drawing up balance sheets and in valuing port fixed assets, historical values are assigned to infrastructures whose real economic value is either much higher (this is often the case of port sites and "wasteland") or considerably lower (this is the case of certain port works that are obsolete, take up space and are of little use).

209. In recent years certain developing countries have decided to adopt microeconomic theories and to eliminate all State subsidies for the financing of port investment, which must then be self-financing. This policy has often been reflected in laws and regulations governing the functioning of ports but rarely have changes been noted in these texts that reflect the new financial obligations of ports in relation either to their pricing or to their accounts. If assets which are of vital economic importance for a port (infrastructure, equipment, etc.) are not shown at their replacement value, and if provisions or reserves are not made to allow for their replacement, how can the port be self-financing otherwise than by becoming heavily indebted? Subsequent intervention by the State therefore seems inevitable unless certain activities are halted or certain traffic is no longer handled.

210. Cost or analytical accounts are an effective management tool as they provide, through division of the port (or of that sector of the port where the organization considered is located) into cost and earning centres, an effective means of following the trend of these parameters and taking appropriate action with respect to their components (staff, equipment). The accuracy of these unit costs may sometimes be questioned when they are partly composed of fixed expenses allocated according to arbitrary criteria. But the advantage of these systems is that they make it possible to follow changes in these factors and to take in good time the necessary corrective measures. UNCTAD has helped certain ports in developing countries to establish an analytical accounts system and the results obtained have been satisfactory (a case in point is the Abidjan autonomous port authority).

## D. Commercial tools

211. In many cases no such tools exist. It is then necessary to create them which is no easy task because it is not the port authority but rather the shippers or their representatives who conclude commercial contracts with the shipowners or their agents and the latter are widely dispersed. Machinery therefore has to be developed for bringing together all the parties offering services in the port area, with a view to finding new markets, either shippers or shipowners, which are then encouraged to make calls at the port. The first tool that must be created and used is the compilation and processing of commercial information. Many port authorities have also strengthened their commercial department in the following three directions: collection of data and information on sea carriers, on land carriers and on shippers (including subscribing to customs service statistics).

212. The second commercial tool is the establishment of machinery for promoting and developing the port at the level of the port community, because commercial or sales activities undertaken will be successful only if all the parties concerned in the port area will benefit. Each port has its own formula but as a rule the basic element is an association - preferably run by business people rather than administrators - with its own budget (financed by the contributions of its members), its own offices (sometimes on chamber of commerce premises), its own staff and its own resources. The third commercial tool is communication (or publicity). This may take various forms according to the needs and the size of the port: organization of promotion campaigns; establishment of a network of correspondents who act as spokesmen and sometimes as salesmen; use of the media (newspapers, radio and television) and participation in trade events and public "open days" in the port, which are very useful for establishing closer links between town and port.

213. It is logical that the port authorities and other members of the port community should carry out promotional activities among foreign shippers and shipowners to make them realize the advantage to be gained from using the port, but they must reach the real decision makers, who are generally the importers or exporters (or the forwarding agents who act for them) of the country where the port is situated. It is they above all who must be convinced of the port's usefulness to them in enabling them to perform their activities competitively at the national and especially at the international level. This also applies to the action taken by the port authority, which is not the "owner" of the goods passing through the port and is therefore not the decision maker in respect of the contract of carriage, which is concluded between a shipper (or its agent) and a carrier. In the case of liner services, however, special promotional activities must be undertaken among shipowners to encourage them to make calls at the port. This is because a high frequency of calls by liner services is of benefit to a port that is competing with others, as the shipper knows that his goods will be more likely to find in the port a vessel sailing for the desired destination and will thus be ensured a better quality of service. This will be an incentive for the shipowner to give preference to the port over other ports. UNCTAD is currently studying these questions, which are currently of the greatest importance, as has repeatedly been emphasized.

## E. Technological and operational tools

214. The first of these tools is the monitoring of technology. At the present time when major changes are taking place in the organization and in the commercial practices of international goods transport, every member of a port community who has general responsibility for the development of port sites and infrastructure must follow very closely all technological developments that may affect the port. In doing so it is necessary first to identify the new technologies that will be imposed on the port (by the shipowners or the shippers) and to reorganize accordingly. It is also necessary to choose and promote certain new technologies that will enhance the port's efficiency. For example, some ports have launched campaigns in favour of palletization of cargo. This "technology watch" must apply not only to port equipment and infrastructure, but also to support services (e.g. data processing) and to working systems and methods.

215. Thus, with a knowledge of technological developments and of their probable (and/or desirable) impact on the port, as well as of the results of research in traffic forecasting, it might be thought that the next stage consists in determining and quantifying the infrastructure or equipment which the port needs. That would be wrong, however. The first step is to consider how the port will be operated, which nowadays means defining the port's operational systems or functioning systems on the basis of an initial planning of these port facilities, the exact size and character of which must then be determined so that they will meet the requirements of the operational systems.

216. The operations carried out in the port, to ensure the transiting of goods and performance of the additional activities which give goods added value, constitute one element in the goods transport and trading chain which is becoming increasingly demanding and where idle time and loss of productivity are being eliminated in order to reduce, not only costs, but also transit time, a concept which is gaining in importance as competition increases. As is well known, certain ports have gained market share by ensuring better transit times, even without having the most competitive port charges. It is necessary always to bear in mind that what counts is the overall cost of the passage of goods through the port and that this overall cost is composed of the disbursements to which transit through the port gives rise, plus the costs of any goods or vessel delays, damage to goods, losses, accidents, etc.

217. Operational systems must be established for each stage of the transit of goods through the port: handling, temporary storage or warehousing, delivery, etc. The most sophisticated systems are to be found at the most efficient terminals, and especially at container terminals. There, all operations are methodically pre-programmed so as to achieve the highest productivity at the lowest cost. The system is formed of successive sequences of technical operations, with subsystems dealing with the collection and circulation of information and documentation. Unlike formerly, when port workers had to be experienced and inventive, the present operations within a system require them to work strictly according to rules laid down. Each equipment/staff combination is determined following an optimization study.

At general cargo berths the same procedure is followed: the cycles of on-ship operations are defined and harmonized with those of transfer to a warehouse, and so on up to delivery of the goods. The introduction of operational systems into ports is increasingly influencing the choice and allocation of port equipment, plans for infrastructure development or modification, and the development of human resources.

218. The various methods used to define and quantify port investments on the basis of economic and financial criteria will not be described here. These questions are dealt with in numerous studies, including the UNCTAD studies "Appraisal of port investments" (TD/B/C.4/174) and "Port development: a handbook for planners in developing countries" (TD/B/C.4/175/Rev.1).

219. Equipment maintenance is the last technical tool to be mentioned. It has become one of the major internal functions of port authorities and operators because it is a vital factor in the functioning of operational systems and in cost reduction. UNCTAD and the World Bank have made studies of this subject and have published the following documents:

- World Bank: The management of port equipment maintenance, Technical Paper INV 57, 154 pages;

- UNCTAD: Maintenance of port equipment (TD/B/C.4/AC.7/9);

  Improving Port Performance, third training course (IPP3):

  - "Port Equipment, Policy, Management and Maintenance".

### F. Development of human resources

220. The wealth of a port lies in its workers. The last, and the most important tool available to those in charge of ports is their workforce. This tool is probably the most difficult one to master and use because, in addition to the difficulties inherent in personnel management, there are the specific characteristics of ports, the burden of the past, the habits and traditions which are sometimes valuable but are sometimes scarcely compatible with the principles of modern management. The expression "development of human resources" has been used here intentionally, because it is the most comprehensive and the most satisfactory one. This concept embraces the functional activities of planning, production, management and appraisal of the personnel of the organization concerned (in this instance the port authority or port operator). Planning here means anticipating the organization's manpower requirements. As has already been mentioned, forecasts of traffic volume two or three years ahead are unreliable. Furthermore, the technological cycles of items of port equipment (and of their associated systems) are increasingly short, sometimes only two or three years. Recruitment of staff, on the other hand, is carried out for much longer periods: 25 to 30 years. The planning of manpower requirements is therefore a difficult exercise. Many workers will necessarily have to be transferred several times during the course of their career, with a consequent need for retraining.

221. Training is therefore a powerful means of production of human resources, as it avoids the need for recruitment, or supplements it by furnishing the recruited worker with the necessary knowledge, including knowledge of port systems. Learning "on-the-job" no longer meets the requirements of productivity and efficiency.

222. In such a context, personnel management is an arduous task, for more and more is demanded of port workers: education, technical competence, mobility, etc., as well as a sense of responsibility and motivation. In both developed and developing countries it has been found that in the case of all the ports which have achieved good results the personnel has been "rewarded" for the part they played in this achievement. The wages and benefits of all kinds which the management have given their staff are generally better than those given in other sectors. This fact has incidentally given rise to problems in certain countries.

223. The performance of port workers is evaluated according to a number of criteria: degree of attainment of assigned objectives; innovating capacity; attitude towards colleagues, customers, the organization; etc. Such evaluation has not become the habitual practice in certain ports. It will nevertheless gradually become the rule, as it forms a logical part of the trend already described.

## Chapter IV

## EXAMINATION AND DIAGNOSIS OF PORT ORGANIZATION AND MANAGEMENT

224. One of the principal features of modern management is the "feedback" function, which enables management to be continuously improved. Examination and diagnosis of management is an effective tool as it makes possible self-adjustment and self-development of the management process. It ensures completion of the "management circle". Management examination and diagnosis are generally carried out on the basis of port statistics, which are collected in each unit of the organization. A good statistical system is a prerequisite for the examination and diagnosis of the state of health of a port or port enterprise.

225. The examination and diagnosis must be carried out either by the port's own personnel or by external consultants. When the diagnosis is performed by the port itself, it is called "self-diagnosis". Such self-diagnosis is of importance for the developing countries since it allows completion of the management circle and permits achievement of self-sufficiency. Examination and diagnosis of management calls for teamwork, which implies participation in the task by the port users and other parties active in the port.

### A. Examination

226. It is necessary first of all to explain what must be examined. The examination might focus on the objectives, to see whether they have been achieved. Here two difficulties arise. Management objectives are always set for a given period. It is very difficult, if not impossible, to judge the results during the particular period chosen. The examination and the diagnosis of the objectives therefore cannot be carried out until the end of the period, which conflicts with the principle of being able at any time to carry out an examination and diagnosis of the port. The examination therefore cannot be confined only to the objectives. The same applies to sound diagnosis; examination of the results achieved alone is not sufficient. Some of a port's internal deficiencies may be hidden by good results that are obtained solely because of certain external factors. Thus a good financial result arising from favourable movements of the exchange rate does not mean much as far as the port's financial health is concerned. The management principle known as total quality control requires the examination to focus not only on the results of the activities carried out, but also on the process of carrying out the activities, so that any problems and their causes may be identified. If there are any deficiencies in a port's management, they will be reflected in the quality of the functions which the port system performs. The examination must therefore focus on these functions, that is to say either on the external, operational and administrative functions that are oriented towards the port's users, or on the internal economic, social and development functions that are oriented towards the interior of the system, the enterprise or the port authority.

#### (1) Examination of external functions (operational and administrative)

227. In order to examine these functions it is necessary first to establish the examination criteria. For the operational and administrative functions two criteria may be used: the previously established norms or standards for

each of the activities (production norms, service norms, etc.) and the customer satisfaction norms. These two criteria must be employed in parallel if the quality of the functions is to be measured satisfactorily. However, the use of the norms alone may prove too rigid a method, because they never cover all the activity perfectly, and especially because they cannot immediately be adapted to meet the demands of customers who are constantly changing. Consequently, special emphasis must be placed on the views and reactions of the port users. Within the port system, a clientele relationship between different units may also be defined. Thus, the customers of the cargo handlers are the shippers and shipowners. The pilotage customers are the shipping agents or the shipowners, and the warehousing customers are the shippers or the forwarding agents. Within a port enterprise, the commercial or sales department is the customer of the goods handling division, etc. A simple questionnaire can be drawn up for obtaining the views of the customers concerning the services provided. Table 4 shows how these criteria for examining the operational and administrative functions of a port system may be applied.

Table 4

Questionnaire for customers concerning operational and administrative functions

| Services provided* | Goods storage* | | |
|---|---|---|---|
| | Satisfactory | Average | Poor |
| Speed/efficiency<br>Security<br>Information provided<br>Tariffs | | | |
| Proposed additional services | | | |
| Proposed improvements | | | |

* A similar questionnaire should be prepared for all the main departments.

(2) Examination of economic, financial and social functions 5/

228. This examination differs from the examination of the "physical" functions. The functions involved here are internal ones concerning the costs and efficiency of port activities. Since the economic and financial functions of a port system result directly from the utilization of the resources available, the examination must focus on the efficiency of their utilization. The resources are of three kinds: monetary resources (working capital), fixed asset resources (land, infrastructure, port equipment) and human resources. The criteria must therefore relate to the productivity of these resources: the productivity of the working capital, the productivity of the net fixed assets (land, port equipment, infrastructure) and the productivity of the workforce.

229. In order to evaluate these economic, financial and social functions, these productivities must be compared with the norms of other national ports

or of ports of other countries and with the port's own performances in the past. In other words, it is necessary to examine the trend of these different productivities. There are many ratios for measuring these types of port productivity, such as operating results/working capital, value added/net fixed assets, etc. Among these various possibilities, it is considered advisable to use the ratios overall port traffic/working capital, overall port traffic/fixed assets and overall port traffic/port worker, as these ratios best express the purpose or aim of a port, which is to achieve the lowest possible cost for the transiting of goods through the port. 6/ These ratios also facilitate productivity comparisons with other national and foreign ports. It should be noted that these three productivity ratios (circulating capital, fixed capital and personnel) are interdependent and that it is therefore desirable to use them all. As for the social functions, several ratios may also be established for these, such as number of accidents per hundred persons per year (or month) or damage cost/turnover. Table 5 shows how to examine the economic and social functions of a port system.

Table 5

Examination of economic and social functions

| | Month (or year) | Previous month % | Objective norms % | International norms % |
|---|---|---|---|---|
| Total traffic fixed assets a/ | | | | |
| Total traffic/ working capital b/ | | | | |
| Total traffic persons c/ | | | | |
| Number of accidents and and breakdowns/100 pers. d/ | | | | |
| Damage costs/ turnover | | | | |

a/ For example: annual tonnage handled per berth or per total length of quays or per crane or gantry, or number of containers handled (TEU) per square metre of storage area, per berth, per linear metre of quay, etc.

b/ For example: tonnage or number of containers per month or per year/working capital.

c/ For handling, the ratios may be tonnage handled per gang and per hour, or annual tonnage handled/total number of workers (including office workers).

d/ The criteria may be: accident frequency (number of accidents/number of persons), seriousness of accidents (number of days lost/number of workers or cost of damage/turnover), moving accidents, permanent disabilities, etc.

(3) Examination of development functions

230. Examination of these functions presents difficulties because port development is preparation for the future and the "results" criteria cannot be used. The examination must focus on four types of activities: information, research, commercial development (sales), improved utilization of human resources and investment.

(a) Information and research

231. These constitute the foundation on which the three other types of activity will be based. In all ports, including those which are too small to have their own research department, the decision makers must be well informed concerning the existing and potential market and be aware of opportunities for development of their port. The examination of this function must therefore focus on the process of preparing and taking development decisions (manpower, sales and investment). It involves determining whether appropriate research has been carried out and what is the quality of that research.

(b) The examination of commercial development

232. This examination must commence with an examination of the port pricing to see whether its level and structure are favourable for the port's long-term development (in comparison with competitor ports). It is then necessary to examine the development of the potential market. This implies having drawn up plans for achieving increased market share (winning new customers) and plans for improvement of services, including services which provide substantial added value.

(c) Examination of investment plans

233. This will show whether the port or port enterprise has prepared itself well for the future, as far as its infrastructure and equipment are concerned. There are three essential points to be checked. It is necessary first to see whether investment plans have in fact been drawn up for the short, the medium and the long term. The next point to be checked is whether these plans are soundly based, whether they are based on the commercial development strategy and plans, that they are both ambitious and pragmatic and that they take account of the port's operating conditions and of changes in technology and in international transport. Lastly, it is necessary to check the extent to which the investment plans are implemented. This involves examining, first of all, the financial situation, the self-financing ratio, the credit terms and repayment capacity, etc. Next to be examined is the execution of the investments (construction work and port facilities), to see that there is no divergence between the forecasts and the actual execution. Finally, attention will be given to the control of investment costs.

(d) The development of human resources

234. This must be examined from four different angles. It is necessary first to see whether there are short-, medium- and long-term policies and plans for evaluating manpower requirements. Secondly, it is necessary to ensure that there is a personnel training and recruitment plan that will meet the staffing

requirements and that this plan takes account of new technological and economic developments in the port (investment and productivity). The next questions to be examined are the quality of the personnel management and the machinery for staff evaluation. Lastly, it is necessary to ensure that the human resources policy and development plans are consistent with those for the port's commercial development and investment.

## B. Diagnosis

235. Having carried out the examination of the port system's functions, it is necessary to proceed to the next stage and to make a diagnosis in order to determine the causes of the problems and to find solutions to them. This stage requires a good knowledge of all the port's activities and a very careful analysis of the results of the preceding examination.

### Classification of deficiencies in port functions

236. A deficiency in a port function may have one or more causes. A port being an integrated system, the causes are often linked, but this does not prevent the identification of a main cause for each deficiency. In the preceding chapter the "tools" of port management that apply to six different fields were described. The causes and origins of almost all the port function deficiencies may be found in these six fields (administrative, economic, financial, commercial, technical and operational, and development of human resources).

237. An indicative list is given below of the principal causes of port deficiencies or problems:

(a) Poorly structured organization;

(b) Lack or inadequacy of laws and regulations;

(c) Inadequacy of, or error in, the system of information and statistics;

(d) Lack of, or omissions in, planning;

(e) Absence of cost control;

(f) Overly rigid pricing;

(g) Deficiency in the accounts system;

(h) Unsuitable sales promotion;

(i) Lack of investment capital;

(j) Poor equipment maintenance;

(k) Failure to use or improper use of modern technology;

(l) Poorly defined work and service norm objectives;

(m) Insufficiently skilled personnel;

(n) Lack of staff motivation;

(o) Poor senior management.

238. There are also some other possible causes:

(p) Influence of factors external to the port (therefore not under its control: e.g. unsuitable national ports policy, excessive State interference, poor market conditions, corruption);

(q) Drop in traffic;

(r) Overmanning, having regard to new technologies.

239. Of the causes in the above indicative list, eight are fundamental causes ((a), (b), (c), (i), (k), (m), (n), (o)). The priority to be given to dealing with the problems involved will depend on the objective. If a rapid solution to the problems is sought, the diagnosis must first consider the technical causes, perhaps in the following order: (l), (d), (e), (f), (j), (g), (h). If no important problems or deficiencies are found, there is generally no immediate solution, the causes being more fundamental. If, on the other hand, the aim is to find definitive and comprehensive solutions to the problems, it will be necessary to undertake the diagnosis of the more fundamental causes, by first of all examining the quality of the overall management, then the staff motivation, etc. The order is therefore (o), (n), (p), (m), (a), (b), (c), (k), (i), (l), (d), (e), (f), (j), (g), (h). Once the causes of the problems or deficiencies have been determined, an attempt must be made to resolve or rectify them, using the appropriate "tools" described in the preceding chapter. It is only by attacking the root of the problems that lasting solutions can be found. It is desirable to carry out such an examination and diagnosis periodically, for example once a year, or whenever the port encounters serious difficulties calling for "rapid treatment".

## Chapter V

## CONCLUSION

240. In the light of UNCTAD's 20-odd years of experience in dealing with the question of ports, it would seem that the most serious deficiencies, mistakes and limitations encountered in the ports of developing countries (and also of other countries) are generally the result of inadequate organization and poor management. Lack of financial resources is generally not a basic cause of these deficiencies. The example provided by ports that are ill-equipped but admirably managed and, in contrast, the case of countries which devote substantial sums to enlarging their ports without improving them, and which transfer bad practices to new investment projects, lends support to this view. Furthermore, when a port system is well managed and organized, the funds needed for expansion are easier to find because the bankers know that they will be repaid and that the investments will be justified and of appropriate scale.

241. As requested this study has sought to determine the principles of modern organization and management. This corresponds precisely to present-day requirements, as the authorities and officials concerned will be able to find in the study information and advice that is applicable to their country, making any necessary adaptations. In conclusion a method for examining and carrying out a diagnosis of a port system was proposed. Some may find this method too cumbersome or complex. They will be mistaken. A modern port cannot be managed in the same way as a small family enterprise. More rigour is required.

242. Self-evaluation or self-diagnosis appear to constitute the best means of ensuring proper control of the port in a fully independent manner. The more sceptical readers may therefore wish to try out this method, developing a small number of indicators that will be regularly updated so as to constitute the basis for the control tables which every modern manager must have at hand.

243. Some ports in developing countries have already adopted this course and have obtained encouraging results. However, they should not be satisfied with this gain and consequently pause in their efforts, because the development of their country requires them to proceed further and to extend their national influence and the sphere of their port's influence so as to promote their foreign trade. It is the cumulation of such efforts that will help give genuine and lasting impetus to their national development.

## Notes

1/ Readers are invited to consult the many studies in this field prepared by the International Labour Office, whose address is: 4 route des Morillons, 1211 Geneva.

2/ Some countries (in the Persian Gulf, for example) have called on the services of experienced foreign operators. This solution may prove necessary in the national interest, because port cargo handling requires a high level of competence that is not always available. However, this should be only a temporary phase during which local staff may be trained to take over.

3/ Journal de la Marine Marchande, 11 January 1991.

4/ Dredging and Port Construction, March 1991.

5/ Annex III shows an example of a port that has applied criteria for the evaluation of financial, economic and social functions.

6/ For ports which give priority to return-on-investment, in addition to the net accounting result, it may be worth using the ratio operating result/capital resources or fixed assets, which may lead to efforts to find "valuable" traffic that can bear high freight charges and help to improve the operating result.

## Annex I

### REFERENCE MATERIAL

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ECLAC, "The transport chain and the competitivity of Latin American exports: port rationalization in Chile" (LC/G.1597).

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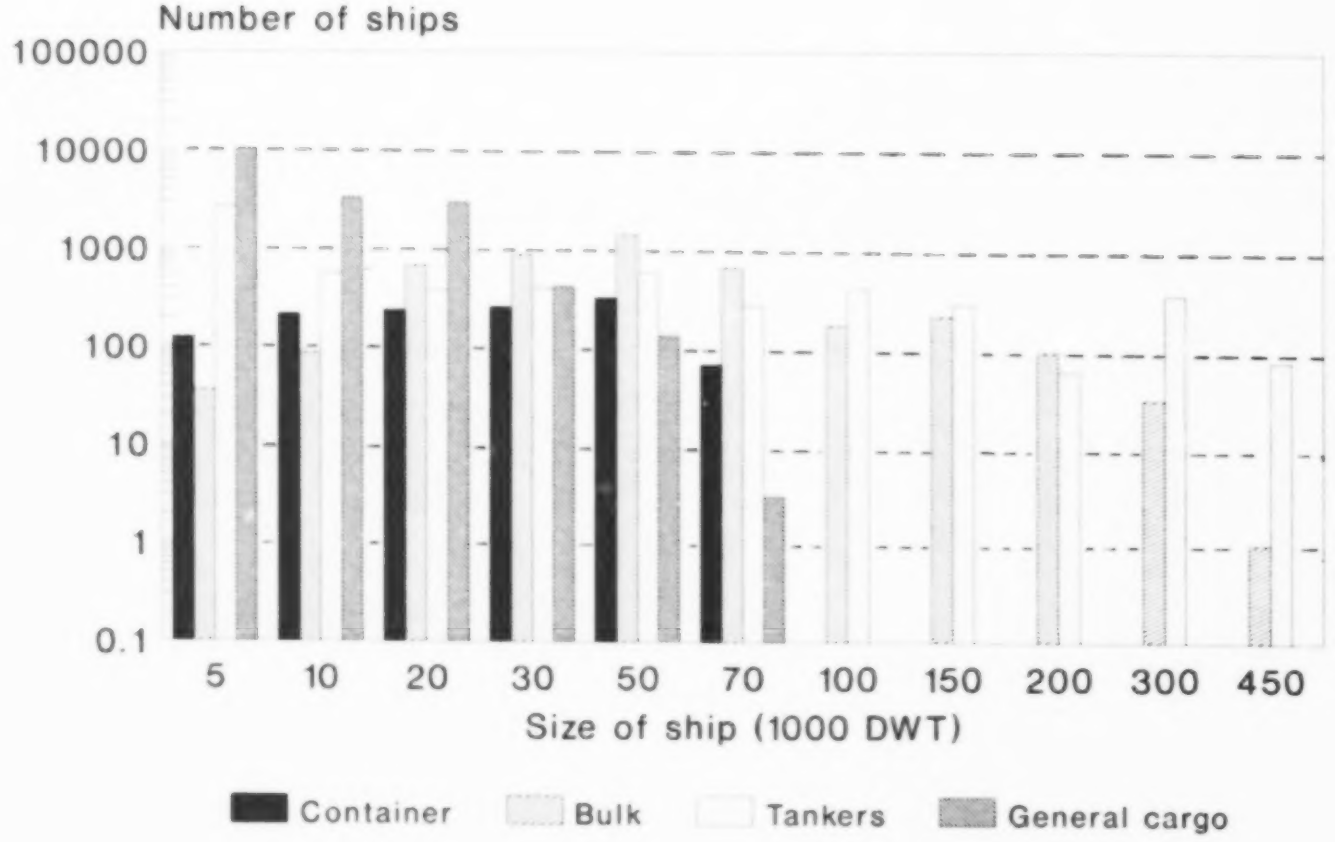
# Total Merchant Fleet
# By size class and ship type



Annex III

EXAMPLES OF ECONOMIC AND SOCIAL INDICATORS

(Extract from the 1989 report of the Office d'Exploitation des Ports du Maroc (ODEP))

**PRINCIPAL FEATURES OF MOROCCO'S PORT ACTIVITY**

**SUMMARY OF 1989 RESULTS** (compared with 1988)

PORT TRAFFIC

TOTAL TRAFFIC: 34.4 MT

A drop of 13.3% due to sulphur, grain, phosphoric acid, phosphates ... The ports of Safi, Jorf Lasfar and Casablanca were the most seriously affected.

**TRAFFIC STRUCTURE**

| | |
|---|---|
| Arrivals<br>or -8.3% | 15.0 MT |
| Departures<br>or -16.8% | 19.4 MT |
| Domestic cabotage<br>or +13% | 1.7 MT |
| International traffic<br>or -15% | 32.7 MT |

In 1989 domestic cabotage accounted for 4.9% of the total traffic, as compared with 3.7% in 1988

| | |
|---|---|
| Containers<br>or +18% | 1.3 MT |
| Liquid bulk<br>or -34% | 9.2 MT |
| Dry bulk<br>or -5% | 19.3 MT |
| Other<br>or +5% | 4.6 MT |

Highest score for all unitized cargoes: +30% for Ro-Ros and +32% for TIRs.

**DISTRIBUTION BY MODE OF TRANSPORT**

| | |
|---|---|
| Conventional | 72% |
| Containers | 11.7% |
| Ro-Ro | 9.8% |
| TIR | 6.5% |

PASSENGERS
1,229,043 or +10%

SHIP REPAIR
60,624 tonnes or +12%

FISH MARKET
Landings 140,021 tonnes or -20.6%

Market value:
593 MDH or +9.5%

PUBLIC LAND
1,266 allocations covering a total area of 1,455,238 $m^2$

**SHIP WAITING TIME**

Average waiting time at the port of Casablanca, which handles 50% of the total traffic: half a day.

**WORK STOPPAGES ON VESSELS**

Work stoppages for all causes combined, at 71,292 gang/hours amounted to 25.8% of the theoretical ship working time, or 8,910 gang-shifts lost.

General cargo 11.1 MT
or -17.5%

Ore 15.7 MT
or -18.6%

Hydrocarbons 7.6 MT
or +9.8%

**PRODUCTIVITY OF CARGO HANDLING**

Change over 1984:

| | |
|---|---|
| Casablanca | +54% |
| Nador | +46% |
| Tangier | +10% |
| Safi | +29% |
| Agadir | +33% |

TREND OF WORKFORCE

1989: 223,999 docker-shifts
1984: 499,000 docker-shifts

**PORT EQUIPMENT**

The availability rates largely covered the operating requirements.

Minimum availability rates:

| | |
|---|---|
| Cranes | 59 to 88 |
| Loaders | 46 to 76 |
| Tractors | 50 to 89 |

Maximum utilization rates:

| | |
|---|---|
| Cranes | 29 to 73 |
| Loaders | 18 to 57 |
| Tractors | 13 to 70 |

PROPORTION OF SUPERVISORS
7.2% compared with 3.8% in 1985

PERSONNEL ENGAGED 130
PERSONNEL LEAVING 358

1,016 workers (21% of workforce)
10,524 days, or 10 per worker trained

**ABSENTEEISM AND SAFETY**

Absenteeism ratio
3.3% of days worked

Number of accidents at work 330

Frequency rate
27.1, compared with 66.2 in 1985

Gravity ratio
0.85, compared with 1.72 in 1986

**SOCIAL PROGRESS**

ACCESS TO HOME OWNERSHIP
140 loans granted

HOLIDAY CENTRES
18,535 overnights

MEDICO-SOCIAL CENTRE
11,000 visits/cases

**MANAGEMENT RESULTS**

Turnover 805 MDH
or +3.92%

Value added 619 MDH
or 0.08%

Operating result 49 MDH
or +5.64%

Trading result 26 MDH
or +36.84%

**FINANCIAL RATIOS**

| | |
|---|---|
| Operating result, before financial profit and costs, to value added | 10% |
| Net financial costs to turnover | 1.8% |
| Operating result to capital resources | 7.4% |
| Self-financing capacity to value added | 25% |
| Cash-flow to repayment of loans and financial costs | 2.18% |
| Capital resources to permanent assets | 49% |

SOCIAL BALANCE SHEET

**EMPLOYMENT AND TRAINING**

| | |
|---|---|
| ODEP PERSONNEL | 4,701 |
| STRUCTURE OF WORKFORCE | |
| Senior supervisory | 431 |
| Supervisory | 765 |
| Workers | 2,946 |
| Permanent dockers | 559 |

FINANCIAL RESULTS

**WORK FINANCED FROM BUDGET**

| | |
|---|---|
| Maintenance and major repairs to port works | 254 MDH |
| Additions to port equipment | 118 MDH |
| Maintence of equipment, tools and infra-structure | 75 MDH |

MDH: millions of dirhams
MT: million tons

## Annex IV

## PORT ORGANIZATION IN THE UNITED KINGDOM

1. Harbour authorities in Britain are probably more varied as regards their constitution and functions than in any other country. The largest of the company port organizations is Associated British Ports (ABP), which owns and manages 22 ports. It is a statutory company wholly owned by Associated British Ports Holdings plc (ABPH). ABP is a statutory corporation without share capital which manages its ports mainly under powers contained in Local Acts and orders and a code of powers contained in the Transport Act 1981. The directors of ABP (comprising 5-13 members) are appointed by a company formed by the Secretary of State for Transport and registered under the Companies Act 1985. However, the directors of ABPH are appointed solely by the shareholders of ABPH, a company whose shares are widely held (but in which there is no government shareholding); and the Secretary of State for Transport has no role in regard to the appointment of directors. Most ports in Britain, the "trust ports", are managed by port trusts. In most cases the port trust is responsible for both the navigational safety functions and the provision of cargo handling facilities, sometimes undertaking cargo handling itself. The size and composition of the boards of port trusts are prescribed by their Local Acts. The majority including the chairman is appointed by the Secretary of State for Transport from among persons who have relevant knowledge and experience. However, it may also be that at some ports the Secretary of State's freedom to make appointments may be fettered by local legislation requiring prior consultation with port user interests.

2. A few harbour authorities in Britain are companies created by statute. The most important of these are ABPH: The Felixstowe Dock and Railway Company; the Mersey Docks and Harbour Company; the Manchester Ship Canal Company; and the Sealink group of ports, all of which have share capital. A statutory company is subject to the same limitations of legal capacity as a port trust but if it becomes a subsidiary of a Companies Act company, as Manchester and Felixstowe have, the wider powers of the holding company may be used in the interests of the port. Some terminals provided by harbour authorities are either leased by them to shipowners or other interests who carry on their own cargo handling or are appropriated by the authority for the exclusive, or preferential, use of such interests. Terminals are also sometimes built by private interests within ports under licence from the harbour authority. Harbour authorities in Britain are now free to determine the charges paid by ships entering, using and leaving the harbour, and by goods brought into, taken out of, or carried through the harbour, but users have a statutory right to appeal to the Secretary of State for Transport in relation to Ship Dues and Goods Dues, and also pilotage charges. All harbour authorities which are port trusts or statutory harbour companies have power to borrow both for capital harbour purposes and temporarily, up to limits which are specified in their respective Local Acts, as amended by the Ports (Finance) Act 1985.

3. In addition to the different kinds of port authorities mentioned above, there are in fact still a few relatively small State-owned ports, i.e. ports owned by the (central) Government, and not by municipal or other local government authorities. Prior to the development of privatization, the

State-owned sector had included the British Transport Docks Board (now Associated British Ports), the largest port authority in the United Kingdom, and also the Sealink ports.

4. Harbour authorities in Britain are now free from direct government control on general economic grounds (e.g. there is no longer a requirement for government permission to be granted for seaport investments of more than a certain magnitude). They are free to make their own decision as regards charges and borrowing, subject only to the constraints referred to above. Although the Secretary of State still has power to make loans to harbour authorities, they are now generally expected to borrow money on the market. The power of the Secretary of State to make grants to harbour authorities was abolished in 1981. There are now no government subsidies for British ports. The Secretary of State for Transport has proposed that port trusts and municipal harbour authorities, at any rate for major ports, should take steps towards privatization. Government legislation to facilitate this, which might include a measure of compulsion for some major ports with a turnover in excess of £5 million, has been considered but not yet introduced. It has been suggested that harbour authorities should promote their own legislation.

## Annex V

## PORT ORGANIZATION IN NEW ZEALAND

1. In 1985, the New Zealand's Labour Government started to implement its policy of deregulating and restructuring of the country's overall 15 seaports. A Port Companies Act was enacted in May 1988 to promote and improve efficiency, economy and performance in the management and operation of the ports' commercial aspects. The Act required every Harbour Board to form and register under general New Zealand companies legislation a company with shares. This was to be done before 1 October 1988. The memorandum and articles of association of the company had to be approved by the New Zealand Minister of Transport. Harbour Boards were not allowed to set up more than one port company although that company may have subsidiaries.

2. So far, 13 such companies have been formed with a total capital of some $557 million, which was funded by debt and equity through a normal commercial arrangement. The entire initial shareholding in the port companies was held by their parent Harbour Boards. The Act provided the option for a Port Company to be listed on the stock exchange; however, so far, no companies have yet exercised that particular option. Harbour Boards were legislated out of existence in November 1989 when the non-commercial port-related responsibilities (such as maritime planning, boating regulations) were passed to regional councils together with shareholding in port companies. These new port companies are organizations which carry out port production and development based on their own financial viability. No subsidies will thus be given by the Government. The Government will receive nothing from the proceeds of the privatization of ports.

3. The Port Companies Act 1988 also specifies that port companies have a Board of Directors, comprising no fewer than six nor more than nine members, of whom not more than two are to be political members or employees of local or regional governments. The Act expressly states that the principal objective of every port company shall be to operate as a successful business.

4. The Waterfront Reform Act 1989 was enacted a year later than the Port Companies Act, and was designed to reform the law relating to employment on the waterfront and specifically to remove special procedures which had regulated the conduct of relations between workers and employers in that industry. The Act paved the way for direct employment of waterside workers and the opportunity for port companies and stevedoring companies to develop a more effective relationship and a stronger commitment to individual employees. The number of waterside workers was greatly reduced following this Act and many ports now operate with less than 50 per cent of the earlier numbers.

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